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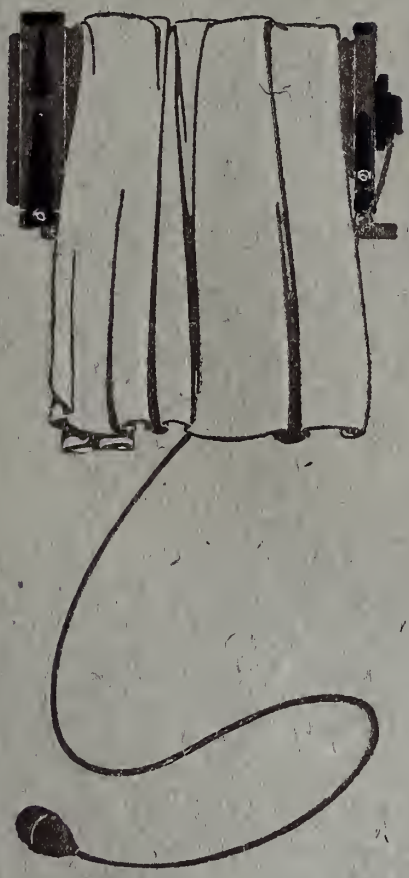

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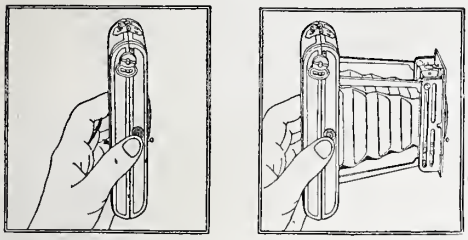

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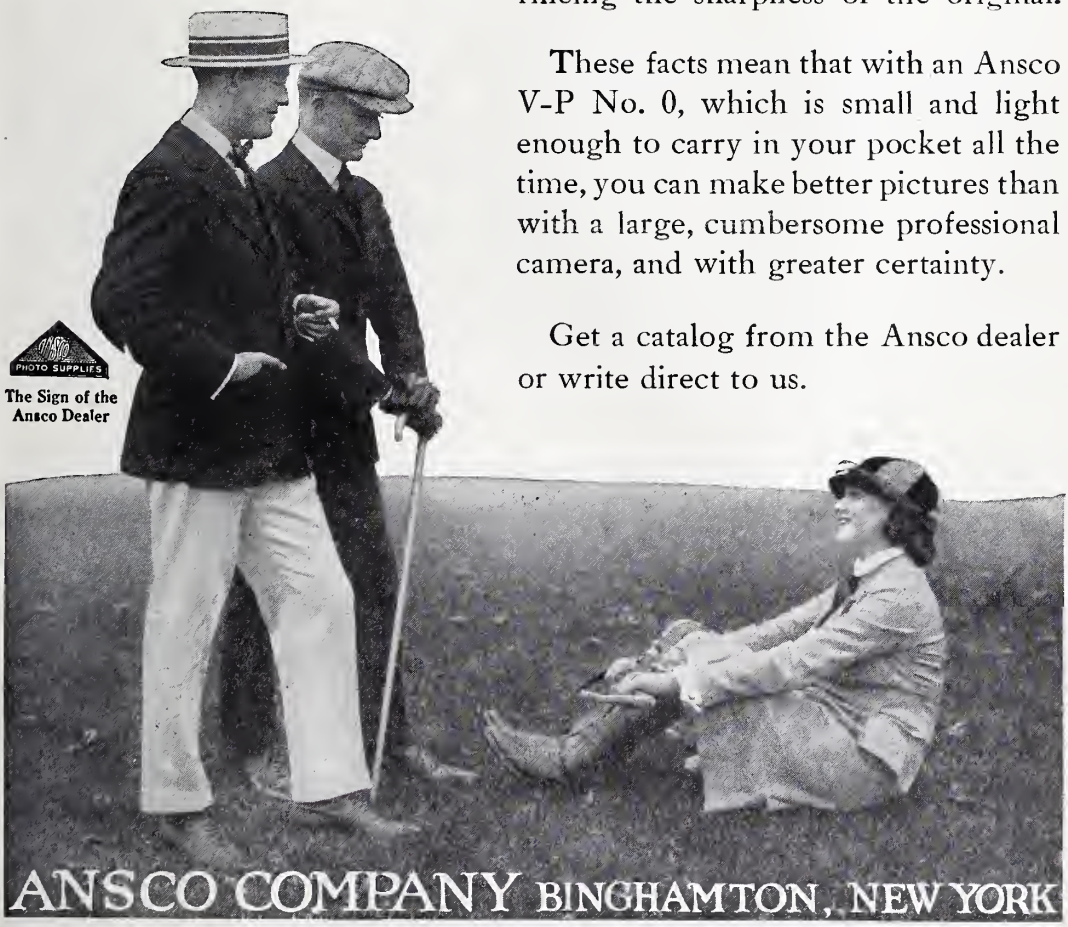

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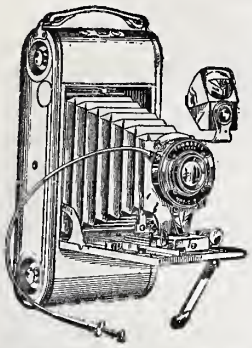

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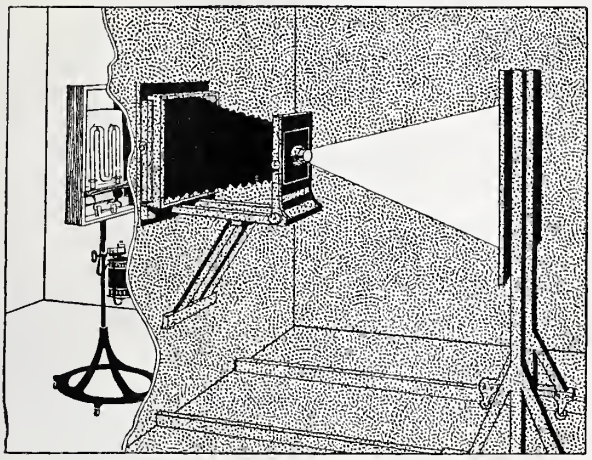

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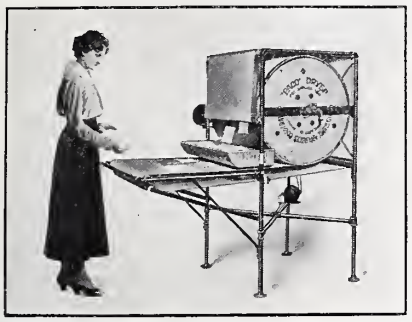

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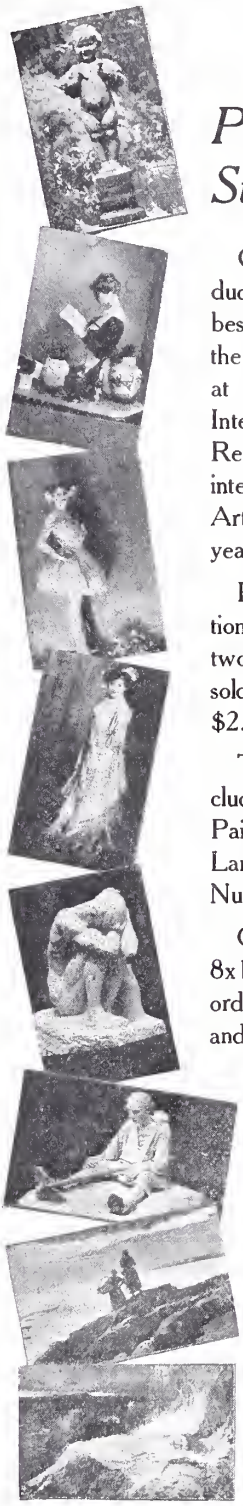

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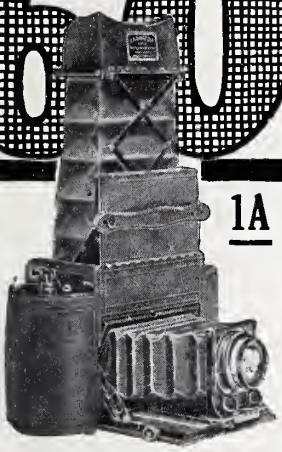

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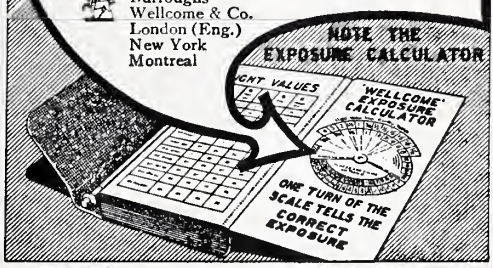

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A Photographic Monthly

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CONTENTS FOR MAY, 1917

A Rainy Night in New York (Frontispiece).....Edward Larocque Tinker
The Flowers About the Home.....John Bieseman 181
About the Small Camera.....Charles F. Rice 185
An Artist with the Camera.....N. A. Wog 189
Electric Light for Portraiture.....Frank E. Cramer 193
Using a Larger Plate.....Charles A. Harris 198
Paragraphs Photographic 202
Unmounting Dry-Mounted Prints.
Editorials 203
Simply to Explain—War Time "Perils of an Amateur Photographer"—Let us Try to be Consistent—A Correction.
A Photographic Digest..... 205
Ortho Plates and Light Filters—Photgraphing Coins and Medals—Better Bromides by Re-Development—Three-Color Screens—Stereo Business Photographs—Photographic Ink—Another Use for the Process Screen—The Adaptability of the Eye.
The Amateur and His Troubles..... 213
Our Vacation Pictures—Using What We Have—Kachin Developer—Soft Prints.
The Cameraman's Page..... 215
Reflectors—Movie or Speed Pictures—Tinting and Toning—Sellg-Tribune Frame Line—A New Film.
International Photographic Association..... 217
Club News and Notes..... 218
Our Book Shelves..... 219
Notes and Comment..... 220

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A RAINY NIGHT IN NEW YORK
By EDWARD LAROCQUE TINKER

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

FAYETTE J. CLUTE, Editor

CLAUS SPRECKELS BLDG. SAN FRANCISCO CALIFORNIA

VOL. XXIV MAY, 1917 No. 5

The Flowers About The Home

By John Bieseman

With Illustrations by the Author

The flowers about the home, those of the door-yard and garden, when arrayed in their summer splendor, have an appeal, a fascination, for those of us who use a camera. But to achieve success, even in the small measure that lack of color permits, a few precautions should be observed. It is useless to attempt to photograph our floral friends in the sunshine and expect good detail and harmony

LEFT: CLEMATIS JACMANI—6:15 P. M. (sun down), f-16, Ortho plate, 3× filter, 5 sec. exposure. CENTER: A COUNTRY RESIDENCE—11 A. M., f-11, Double Coated Ortho plate, 3× filter, 1/5 sec. exposure. RIGHT: NASTURTIUMS AND CANNA—5:30 P. M., cloudy, f-22, Ortho plate, 3× filter, 2 sec. exposure.

in the tone gradations. The results would be disappointing, shadows would be devoid of detail, and texture would be entirely absent in those parts exposed to the bright, glaring light. One should select, instead, an hour in the early morning, or late afternoon, when no part of the subject is too strongly lighted; but even then the depth of the shadows is not diminished. The most suitable, because most uniform, lighting for such subjects is secured when the sun is somewhat veiled by a cloud or clouds; but, of course, this condition is not always present. Such light is diffused in quality because the sky itself becomes a source of illumination, through reflecting the sunlight that reaches it despite the fact that direct rays are cut off by the clouds. Such a light acts very evenly, penetrating the shadows better while at the same time illuminating more softly the outward or well lighted parts.

If one will investigate this matter of using the light reflected from another quarter of the sky when the direct rays of the sun are cut off by a small bank of clouds, he will find that a time of day can be chosen when the principal light falls at such an angle, preferably one of about forty-five degrees, that the subject will present the best pictorial effect. A slow plate should be used if the air is calm and quiet, as the quality of the resultant negative will be much better than it would were a fast plate employed. Whenever possible, a double-coated orthochromatic plate should be used in connection with a "three time" ray filter.

The home itself is usually best photographed from a point showing the entire front and some part of one side, and the composition so arranged as to include a sufficient foreground and some little sky above. Such trees and shrubbery as one may wish to include, or exclude should also be given attention. Having by a preliminary survey decided upon what is wanted in the picture, the camera, with the lens wide open is stationed at the proper distance to insure its inclusion. It is well at this point, to judge what exposure is required with the large stop, say U. S. 4 or f-8, and then double the time for each successive smaller stop as the diaphragm is reduced to obtain the desired depth of definition in the subject. In some cases, the exposure will have to be limited, somewhat, in order to avoid motion resulting from an unexpected breeze; or, perhaps figures must be included. In such cases a little less stopping down can be indulged in and, as a last resort, the service of the screen dispensed with. While the latter should be used whenever possible, a fully-timed plate without the screen will perhaps be better than an undertimed one made with it in position.

The plates recommended, the double-coated orthochromatics, should be developed in a tank; or, if by the tray method, the developer should be diluted by adding an equal amount of water. The developing time should also be doubled. In printing from these negatives it will found that either a soft or medium grade of paper will be most generally satisfactory. Occasionally it may be necessary to use the contrast grade; for example, when an orthochromatic plate has been just perceptibly fogged by an unsafe light in the darkroom.

One will sometimes find that a view point selected to include part of one side as well as the front of the dwelling, bring into the view objectionable objects or perhaps cuts off some desirable portion. In such cases a direct view of the front only may be the best that can be secured in the way of a composition. Often such a view is preferred or wanted, with the front alone as the main attraction. Per-

BED OF NICOTIANA—5 A. M., in shade, f-22, Double Coated Ortho plate, 3× filter, 1 min. exposure

haps the veranda is chosen in order to permit the portrayal of members of the family, either singly or in groups. The lighting for such pictures, if the proper time of day be chosen, is often of the best.

Coming to the flowers, a trailing vine, in full burst of blossoms, is a superb subject for the camera at almost any time. If it be a white clematis, such as the one shown herewith, the lighting cannot be too diffused. A rather clouded sun,

FALSE SOLOMON'S SEAL—8:20 A. M., in shade, f-22, Ortho plate, 3× filter, 4 sec. exposure

or the early morning and late afternoon hours, should be chosen for making the exposure. Should a crimson rambling rose be the subject, the lighting can be somewhat stronger, but not full sunlight. With these subjects particular attention should be given to see that they are in good focus on the screen, and the lens stopped down for fine definition. Growing plants, when in blossom, make good subjects for exposure. These having light-colored flowers are especially desirable as they contrast quite effectively against almost any kind of a background that may result from objects in the rear.

Red flowers require that the background be chosen with more care, one of the best being cheese-cloth stretched over a light frame work of slats. A simple sheet of cloth thrown over a horizontal wire or pole, is effective, and can be quickly arranged. Care should be taken that it is destitute of creases due to folding or to its not hanging straight, as such marks are objectionable in the finished print. Where the background is of sufficient size and room permits, it can be placed far enough back of the flowers to be out of focus and therefore be soft. Again, if suspended from a wire or string, an assistant can easily keep it in motion during the exposure and so prevent its texture being too sharply defined. A generous portion of the ground from which the plant, or clump of plants, makes its growth, should be included to serve as a base and show their natural symmetry of form, but this need necessitate only enough to balance the composition. Any fading or wilted floret or leaves should be carefully removed before the exposure is made, and frequently a stray branch or straggling branch can be cut away to advantage. These undesirable features will sometimes appear more prominently in the print than in the living plant as presented to the eye.

Individual trusses and clusters of florets make good subjects for recording on our plates. Choose such a cluster and then view it from different angles in order to determine the most desirable position, particularly in reference to the lighting. As a rule, the most prominent portions of the florets should be turned toward the source of light. The background for such subjects should be carefully selected; and, not needing to be large, sheets of cardboard, and even of paper, may be brought into use. As a fairly general rule, one should use a white background for reds and all deep shades of orange and blue, while a black or dark-slate colored ground is best suited to those that are either white or some light shade of blue, pink, or yellow. With these small subjects and the camera so close, one can readily manipulate the shutter with the right hand while holding the cardboard background in position with the left. Such a cardboard background can also be suspended from or leaned against an upright stake placed in the rear.

The camera should set up so as to be as nearly on a level with the subject as the tripod or other support will permit. Frequently a small box will be found a good substitute for the many-jointed part of your equipment. In making the exposure it is well to remember that the deep red flowers will bear a doubling of the exposure, and very dark crimson reds may be given three times the normal exposure. One need have no fear of over-exposing other parts of the subject, as these are mainly only the plain green stem and leaves that will not be affected. If the subject be an entire plant with a wealth of crimson flowers in evidence, there is nothing to be done except to use a panchromatic plate. Even

LEFT: CANNA FEURMEER—3 P. M., cloudy, f-16, 6 sec. exposure. CENTER: CANNA GLADIO-FLORA, 9:20 A. M., cloudy, f-22, 20 sec. exposure. RIGHT: CANNA FIRE BIRD, 4:25 P. M., in shade, f-16, 30 sec. exposure. Double Coated Ortho plate and three times filter used in each case

then, the subject, rendered in monochrome, is hardly satisfactory and this points out the fact that light colored flowers are the best for our purpose. With them, the contrast presented to the eye is possible of pleasing portrayal without the aid of color.

About The Small Camera

"A Dollar's Worth of Advice"

With Illustrations by the Author

EDITOR'S NOTE: *Knowing of Mr. Rice's extensive correspondence with amateurs seeking advice on photographic topics, and believing that much of the counsel given in individual cases would be of interest and benefit to many of our readers, I have asked him to furnish, for our columns, from time to time, selected portions of such correspondence. The first installment is here given.*

The following is the text of a letter in reply to the inquiries of a man who has never possessed a camera, but who has about decided to purchase a small pocket camera with anastigmat lens. He has acquired much data on various models from the manufacturers' catalogues, and before making a final choice he seeks advice on different points.

"DEAR SIR:

"Your letter, with one dollar fee enclosed, received. Thank you. I believe I shall be able to give you some helpful suggestions, especially on the subject of pocket cameras, for pocket camera work is one branch of photography in which I have specialized.

"You are somewhat undecided between a 1¾x2½ camera and one of 2¼x3¼ size. You favor the smaller equipment for reasons of convenience, light weight, etc., but you are doubtful if the smaller negatives will yield as good enlargements to postcard size, or possibly 5x7, as could be obtained from the large size. There should be no difficulty in enlarging at least to 5x7 from a 1¾x2½ negative made with an anastigmat lens carefully focused, securing excellent quality in such enlargement. As far as fineness of detail and general appearance of the enlargement is concerned, there should be no appreciable difference between it and one of the same size made from a 2¼x3¼ negative of the same subject. The choice between cameras of these two sizes should be decided by other considerations than the quality of results.

"You ask me if film pack is more convenient than plates, and if with film pack it is possible to focus on the ground glass between exposures. The film pack is decidedly more convenient to handle than plates, up to the process of development. From that point to the time the negatives are washed and dried, plates are a great deal more convenient to manipulate than the film pack. In very small sizes, roll film is, on the whole, much more convenient than either plates or film pack. Ability to focus on the ground glass between exposures is one of the strong points of the film pack. But in the very small sizes this has always seemed to me to be merely a 'talking' point, and of no great real advantage; for in practical work with a vest pocket camera you will find it more convenient and just as certain to depend on the finder and focusing scale as it is to use the ground glass for focusing.

THE TOM PAINE HOUSE—Cramer Panchromatic plate, Dagor lens, deep yellow filter, f-6.8 stop, one-fifth second exposure. Golden glow in foreground

SMILING MEADOWS—Orthonon plate, Dagor lens, light yellow filter, f-6.8 stop, one-half second exposure

" 'Is the use of the rear lens alone as a longer focus lens an advantage worth considering?'

"No, not in the case of a pocket camera, where practically all your prints are enlargements. If you were going to buy a larger camera, say postcard size of 5x7, and intended to produce mainly contact prints from your negatives, then I should say the ability to use the rear lens alone would often be a real advantage; but where the enlarger will be a part of your regular equipment, you would seldom have occasion to use a longer focus lens. The same result, or better, could be secured by a greater degree of enlargement in making the print, using a correspondingly smaller part of the negative.

"As to choice of enlarging apparatus, that will depend a good deal on how you are situated. If you can devote time during daylight hours to this part of the work, and can appropriate an entire room to your exclusive use during that time, I should strongly recommend that you rig up a daylight enlarger, using your camera as a part of the apparatus. This will be inexpensive and require no great mechanical skill. You will find easily understood directions in any one of several booklets on the subject that your dealer can supply.

"If you have to do your enlarging at night, you must necessarily depend on artificial light; and you will have to get an enlarging lantern of some sort. There are several good ones on the market. Electricity is better than gas. As between the electric arc lamp and the gas filled nitro bulb, I should choose the latter. I have used both. The arc gives a stronger light than the nitro bulb of five hundred watts or less but the light of the arc is not so steady and uniform. The great

BROWN OCTOBER—Orthonon plate, Dagor lens, light yellow filter, f-6.8 stop, one-fifth second exposure

heat generated by the arc is also a disadvantage, especially when films are used, and the carbons need frequent adjustment.

"And now that I have endeavored to answer all your inquiries, I am going to advise you not to buy any of the equipment we have been discussing, at least, not at first. You have never possessed a camera, and none of the cameras you have asked me about is quite what I should recommend for a beginner. You will do better work and be better satisfied in the end, I am confident, if you make your start with a simple inexpensive outfit. You favor a small camera. Very well. Get a fixed focus, roll-film, vest pocket camera; and if you do not object to a few dollars' increase in price, get one equipped with an anastigmat lens. To use with it get a fixed focus, box form enlarger. Carefully read the instructions that come with the outfit, and then 'go to it!' If you should feel the need of advice before you are satisfied that you have mastered this simple equipment, and it is quite possible that you may, I am at your service. Then, when you are ready for a more capable camera; or if, after all, you should decide to begin with the more elaborate apparatus, I believe you can safely rely on what I have said in the first part of this letter. (Signed) "Charles F. Rice.
"Mamaroneck, N. Y., April 2, 1917."

To get at the spirit, the pervading influence, the expression of a subject, and at the same time to show frankly and to the best advantage the medium employed, so that the appeal may be ingratiating in its manner as well as impressive in its matter, is a primary object of pictorial art.—Antony Guest.

An Artist With The Camera

By N. A. Wog

With Illustrations by Emma B. Freeman

EMMA B. FREEMAN

I have before me a letter from ye editor of CAMERA CRAFT, asking for a story on Emma B. Freeman, the Eureka, California, photographic artist, and suggesting that the story be made interesting and instructive to devotees of the photographic art.

As my knowledge of photography is limited to a rather critical appreciation of the finished picture,—be it good, the realm of technical details regarding solutions, plates, cameras, methods and other matters so glibly discussed by students of photographic art, must necessarily not be invaded. Also, as this story is to be illustrated with a few examples, I shall leave all criticism of her work to the tender mercies of the readers of CAMERA CRAFT.

Through this process of elimination I am reduced to the pleasurable task of confining my story to telling what I know about the career, aims and ambitions of a little woman whose pluck, talent and persistency of effort has earned her a place among the aristocracy of American photographic artists.

That "artists are born and not made" is surely demonstrated by Emma B. Freeman, for while it was the dream of a little eight-year-old, pigtailed, Nebraska girl, that "someday" she would be a real artist; a farm in the middle West during the "lean" years cannot, by any stretch of imagination, be considered a

desirable environment for the birth, nourishment and development of artistic tendencies. But from the time "little Emma" found that Nebraska clay could be fashioned into figures other than mud pies, and when her earliest artistic effort, drawing "teacher" on the blackboard, earned her fame among her schoolmates and a spanking from her subject, every moment that could be stolen from study and the never ending task of "helping mother" was consecrated to drawing pictures and coloring them with crayons, a ten-cent box of which was her first and greatly prized possession in the way of artist's materials.

ADMIRAL W. B. CAPERTON Commander-in-Chief Pacific Fleet
Copyrighted 1916 by Emma B. Freeman

In early womanhood the starved and narrow existence incidental to chaperoning cows, pigs and chickens on the homestead, became unbearable to a nature that thrilled with high ideals and a love for the beautiful. Possessed of a spark of artistic talent that would not be smothered, in the face of warnings of friends and entreaties of relatives, a pilgrimage was planned to San Francisco where the little farm girl had ever dreamed lie fame and fortune.

Emma's carefully saved "egg money" fund was soon depleted in buying an outfit for the journey, and for purely economic reasons a ticket was purchased to Denver only. There a rapidly thinning purse necessitated a flight to a haven of refuge behind the ribbon counter of a department store, where a weekly pittance of six dollars was soon augmented by the manufacture and sale of flowers fashioned from ribbon and the occasional sale of a sketch to a friendly art dealer.

Two years later found Emma B. Freeman in San Francisco making leather novelties and burnt wood gee-gaws, painting Easter and Christmas

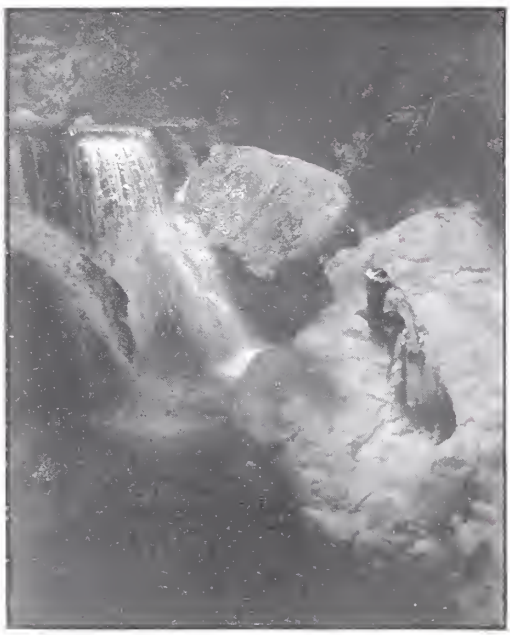
cards, coloring photographs and doing sketches in pastel and water colors. The mornings were spent in soliciting orders that would be made and delivered in the afternoons. The business grew apace, and later a tiny store and shop was opened at the corner of Octavia and Union Streets.

Then came the San Francisco fire and a fresh start on a borrowed hundred dollars capital in the city of Eureka. There the little San Francisco art shop was duplicated and the business met with varying success until the owner of a rather dilapidated photographic studio induced Mrs. Freeman to purchase his outfit. With this, but without the slightest knowledge of photography, this nervy little woman worked day and night to make the best of, what she then thought was a very bad bargain.

Quickly acquiring a technical knowledge equal to that of her predecessor, and taking a course at the Eastman school, by bringing into the new departure her unfailing energy, business acumen and artistic ability, but a short time elapsed before her portraits and studies became so widely known that they were in great demand by magazines, art stores and the like. The business of her little studio grew to such an extent that it became necessary to engage the services of a business manager, and to H. B. Burnett must be given the credit of materially assisting in the ultimate financial success of the little pigtailed, eight-year-old kiddie, who, on a Nebraska homestead, dreamed, over mud figures and school crayons, dreams of an artistic career that is today a very much assured fact .

A PORTRAIT

Mrs. Freeman refuses to talk "shop", and at the time of this writing is more interested in the subject of "national preparedness" than in photographic means and methods. An hour's interview elicited only the fact that she would be at the "front", and had offered her services, as a photographer, to the Government. My previous acquaintance with the lady justifies, however, my deduction that her artistic success is largely due to a personality that is unique inasmuch that she unconsciously ingratiates herself into the affections of her subjects. Even the casual sitter for a portrait is at once at ease and willingly submits to her personal magnetism and charm. This is strongly demonstrated by her success in photographing Indians, for the Indian's traditional fear of a camera is by no means a fiction, but a hard and fast fact, born of and bounded by superstitious beliefs that succumb only to the influence of a master mind combined with implicit confidence in the photographer's honesty of purpose.



THE MESSAGE OF THE GREAT SPIRIT
Copyrighted 1915 by Emma B. Freeman

THE MADONNA OF THE INDIANS
By EMMA B. FREEMAN

"I love my Indians," said Mrs. Freeman to me one day. "They are a wonderful people; shy like strange children, but, once the barrier of timidity and suspicion is removed, there is revealed a noble and loveable character, and the camera, in its merciless registration of detail in both physical and mental perfection or imperfection, surely proves that the 'original American' is of a much higher type than generally credited.

There is much, much more that I could write about Emma B. Freeman: That she studied oils and pastel under Cadenasso, of San Francisco; landscapes under Harmon, the well known artist of the redwoods; and that a permanent Freeman exhibit and sales room will soon be opened in San Francisco. But that sounds too much like press agent stuff, and I shall therefore close this brief sketch of her career.

Electric Light For Portraiture

By Frank E. Cramer

Illustrated by Hartsook Studio, Cardinell-Vincent Co. and the Author

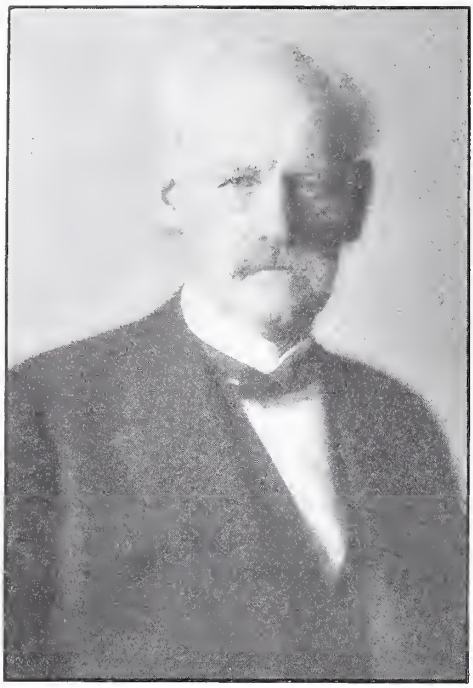
PORTRAIT OF THE AUTHOR—Made with the Northern Light used in an ordinary room

In following home portraiture for over fourteen years, the writer has seen the practice evolve from uncertainty as to results, on the part of both the sitter and the photographer, to the present stage where good results are as certain as under the skylight, the good quality of the portraits being limited only by the skill of the operator.

My earliest home portrait work was all done with an entire dependence upon daylight. With daylight one must take the light as he finds it, which means that he can employ it only during the brightest part of the day which is usually between 10:30 A. M. and 2:30 P. M., and this practically limits the photographer to two sittings a day. In addition, the available background effects are confined to such as are afforded by the accessories nearest to the available light, or those parts of the rooms immediately about the window selected, when often the most artistic and pleasing arrangements of furnishings suitable for a background are to be found where exposure by daylight would be out of the question.

The flash-light, about this time coming into some prominence through the offering of portable portrait apparatus, appealed to me as perhaps affording a solution of some of the difficulties under which I was working. Pictures of children and elderly people seemed to be more likely of success with the shorter exposure required, and the hours available for work were extended, making a larger volume of business possible.

Some very beautiful results have been, and are being obtained by the flash-



TWO EXAMPLES OF HOME PORTRAITURE—The first, that of President Mackintosh of the California Camera Club, was made with a diffusing lens. The other shows the detail and fine texture that can be secured

light system. The ghostly stare of the earlier flash work, with the soot-and-whitewash effect once thought characteristic of the flash, has been replaced by pleasing expressions and a degree of texture and detail equal, if not superior, to that secured under a skylight. But the dear public, the sitters, were dissatisfied. They demanded something that would not startle with its abruptness, claiming that the suddenness of the light made them nervous. It was evident that some of them were made nervous, for their expression often showed the effect.

About this time I read of the use of banks of incandescent lights, but they were too bulky and slow for home portrait work, slow even for the studio. There were various forms of carbon lamps that permitted fairly short exposures but produced harsh, indifferent effects. They required special wiring and installation of apparatus that disqualified them as portable equipment.

Trying out a number of these lights and almost despairing of finding anything entirely satisfactory, I ran across some examples of portraiture made with an arc lamp; and, thinking that if such work could be done in a studio, the same light, if portable, was just what I wanted. The light, I found, was what is called the Northern Light, one that is portable in the extreme, being supplied in a form that permits it to be packed in a small fibre case, not so large as a suit case, yet the light can be quickly set up ready for use.

The light seems to be particularly strong in actinic rays, as, while the harsh glare of the old form of light is entirely absent, the exposure necessary is surprisingly short. It was only after making several negatives that I could bring myself to the avoidance of over-exposure. Even with a screen to subdue the

light for various artistic effects, the exposures required ranged from only one-half to a whole second. Diffused only by the holophane reflectors attached directly to the light, portraits of adults require from one-fourth to one-half second, children in light drapery requiring from one-eighth to one-quarter.

Another feature that should be mentioned is the what may be called the carrying power of the light. This is particularly noticeable when the light is used for large groups, home dinner parties and the like. Not only this, but the light blends beautifully with daylight, thus permitting the making of some most pleasing effects, when the opportunity presents. One of the illustrations herewith shows a picture of this kind. This is not only advantageous to the portrait man but should make the light of no small value to the commercial photographer. The portrait photographer, the one using the regular skylight, has, perhaps, the greatest opportunity of utilizing this feature in producing pleasing and unusual artistic two-light effects in unlimited variety.

A HOME PORTRAIT—Combination of Northern Light and daylight from the window shown, giving a very pleasing result. Photograph by Cardinell-Vincent Company, San Francisco

As to the method of using the light, there is really little that can be said. One has only to assume that the front of the lamp hood is a small skylight from which the light spreads out instead of passing through in a straight path. Instead of raising both the upper and lower curtains in order to get the light from a higher point, as with a skylight, the light is simply raised on its standard. Instead of moving the sitter about, the light itself is moved to the desired position. Working, with the light too close through fear of its not being strong enough is a tendency that one must guard against, as is also the inclination one has to give too much time and develop too far.

If one will bear in mind that the light spreads out as it proceeds from the reflecting enclosure in which the carbons burn, he will have no trouble in securing the most harmonious effects. Particularly soft and rounded lightings are secured with a screen in front of the light. The light is evidently quite strong in ultra-violet rays and for that reason the shadows in the resultant negatives are not as strong as they appear to the eye, although a quick exposure may give one just a little stronger high-lights than he expected. All in all, however, the effects secured are, once one gets over his inclination to over-expose, the same as the effect seen by the eye. The use of screens and reflectors is simplified by reason thereof, and the convenience afforded by the moving of the light instead of the sitter, is one that can hardly be over estimated, particularly in home portrait work where some particular background or placing of the sitter has been selected as being the most desirable.

In addition to all this, slightly turning the light from side to side gives one no little control over the treatment of the background. One can keep that portion of the room behind the sitter quite dark and subdued, or render it fully illuminated. A portable background permits the production of very charming shadow effects that, with but a little retouching, can be made most effective. In the studio the use of the popular white background is made a very simple matter because of the actinic quality of the light and its tendency to spread out rather than fall in a direct flood. With a simple graduated ground one can secure good contrast with any part of the figure by the simple expedient of cutting off a portion of the light with an opaque card held against the diffuser in front of the lamp.

Line lightings, halo effects, and the like are all very easily made by combining the electric light with daylight, only the smallest amount of experience, if

A GROUP OF CALIFORNIA CAMERA CLUB MEMBERS—Observe how well the light "carries" to the extreme end of group

TWO PLEASING PORTRAITS BY THE HARTSOOK STUDIO—Showing the possibilities of the light in studio work

any, being required. With the sitter posed so that daylight illuminates the further side of the head and the lamp so situated that the near or shadow side is illuminated, innumerable pleasing effects are obtainable.

For illustrations to this article I am using two portraits made by Mr. Anderson of the Hartsook Studio, this city, because these show the work of a photographer using the electric light for the first time. The home portrait by Cardinell-Vincent Company is a pleasing example of work done with the light, used in connection with daylight. The other examples are such as I have available at the moment and they are introduced, not as showing the best in posing and the like, but as showing the wide range of work that is made possible. There is really but little that I can offer in the way of instruction in the use of the electric light because it is all so simple. The possibilities are limited only by the photographic skill of the operator, being fully as great as with the skylight, with the further advantage that the light is always uniform, always ready, and always under the most full and complete control. When we add to these the quality of easy portability and quick setting up, the reader can see that in recommending it so strongly as the equipment par excellent for home portraiture, I am but voicing a sincere conviction based on actual practice with the light.

When the evening's mist clothes the river's side with poetry, as with a veil, and the poor buildings lose themselves in the dim sky, the tall chimneys become campanile, and the warehouses are palaces in the night, and the whole city hangs in the heaven, and fairyland is before us.—WHISTLER.

Using a Larger Plate

By Charles A. Harris

With Illustrations by the Author

The average hand camera on the market today may be considered quite complete within the limits imposed by its small size, and it is only hoped to indicate in the following how, in some cases, the user may exceed these confines. Those possessing, in connection with their camera equipment, a modern anastigmat lens, such as is fitted regularly to the better class of small cameras, should know that a plate one or more sizes larger than the camera calls for may be fully and sharply covered by using the smaller stops. This secures to the owner the facility of an excellent wide angle objective, so often necessary in photographing cramped interiors, tall buildings and the like. As I have managed it, a supplementary back to carry a larger plateholder is constructed, the small camera being used therewith merely for the purpose of utilizing the bellows and rack and pinion facilities for fine focusing. Incidentally another advantage is gained, that of securing a long draw for a short bellows camera, useful in copying and photographing small objects. By outlining the details for a particular case the necessary modifications for other varying cameras and lenses may readily be adapted therefrom.

Supposing then, we are considering a 3¼x4¼ camera of the bellows type designed for plates and film pack. The outside dimensions of this is about four inches wide by five and one-half inches long, when closed. The lens, let us say, is of five and three-eighths inches focus, and the bellows has eight inches draw. One of the extra capabilities we may expect of this outfit is that the lens, when properly stopped down, will cover either a 4x5 or 3¼x5½ plate, but there being no objection in having the new plate holder one or two sizes larger, we will arrange for a 5x7 size. This auxiliary arrangement will probably not be carried about to any extent and the extra margin in the matter of size may very well be in reserve for other lenses.

In the case under analysis, the 5x7 holder is necessary to take care of the two sizes of plates mentioned, and it so happens that this size also provides ample space for the small camera to be operated as explained. This decided, the holder becomes the starting point for measurements. Probably all are familiar with the method employed in making a simple form of wooden box. The two ends are usually thicker than the sides for secure nailing and, of course, the sides are nailed to the ends; not vice versa. The first step is to make such a box the length and width of which will correspond to the dimensions of the plateholder so that the latter fits like a bottom thereto. These measurements should be full rather than scant so that the holder may work smoothly. The depth of this box will be seven and one-eighth inches. Care should be taken that the

raised strip across the slot end of the holder should come opposite the middle of the thicker wood forming one end of the box a channel or groove being cut in the edge of the board at that point for its accommodation. Each of the four sides of the box consists of single pieces of wood, as we shall want it light-tight. The material can be about one-half inch for the thick ends and one-fourth inch for the other two sides.

Next comes the making of the frame-like attachment for the reception of the holder. This, as shown in the sketch, is of light material, three-sixteenths of an inch in thickness. I found the thin boards of a lemon crate suitable. Completed, it fits snugly over the plate holder end of the box, except at the side coming opposite the channel or groove above mentioned, where it is open for the reception of the plate holder. In nailing this in position over the end of the box, a space is left about one-eighth of an inch more than the thickness of the plate holder. Across the inner side of the frame that comes in contact with the end of the holder when the latter is inserted, is glued a thin, wedge-shaped strip, which acts by forcing that end of the holder snugly against the edges of the box. A similar but removable strip is provided for the other end, this being inserted each time the holder or focussing screen is placed in the frame. These wedge-shaped strips, one at each end, serve as our substitute for the usual spring back. It is very simple and results in a light-tight back for the holder if the parts are carefully fitted. This enclosed pocket for the plate holder is really a better protection against light leakage than that afforded by the regular camera, for I have known instances where the latter leaked light around the edges of the holder. The removable wedge, the one put in place each time the holder is inserted, can be attached to the back with a short length of string, so as to be always at hand.

The focussing screen for use with this back can be provided quite easily by cutting away the press-board septum from the center of a regular holder, leaving about three-eighths inch margin all around. A piece of ground glass in this takes the place of and will register the same as a dry plate used in a complete holder of the same kind. The one for the focussing screen, can, if desired, be used as a plate holder at any time by placing a sheet of heavy paper between the two plates as they are put in position, one on each side. If preferred a frame can be made the same size as the regular holder, to carry the ground glass used for focussing, care being taken to have the ground surface come in the exact position of the face of the plate when the latter, in a plate holder is in turn placed in position. Should it be desirable to provide for a plateholder smaller in size than the necessary dimensions of the box, a smaller pocket similar to the one described for the accommodation of the holder and the ground-glass screen may be arranged in the center of a piece of board cut to fit the back of the supplementary box. This, nailed to the edges of the latter, takes the place of the holder frame illustrated in the drawings. Such an arrangement typifies, for our purposes the customary reducing back frequently used with large cameras.

This done, our supplementary back is ready to welcome the small hand camera with which it is to be used. Next in order comes the fitting of what

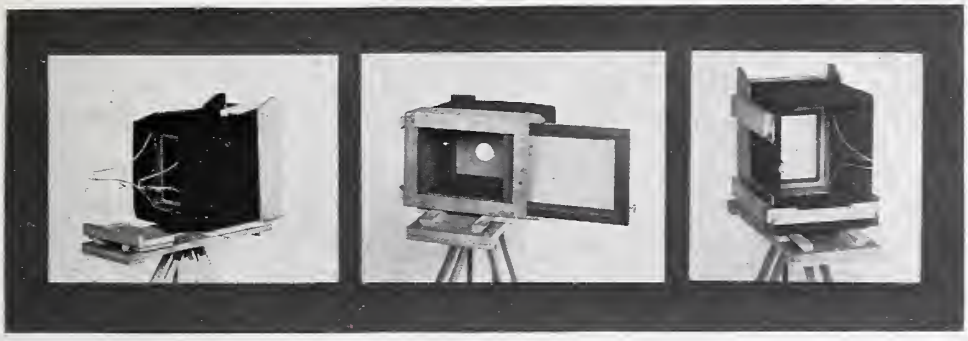
might be called a front board, as it will sometimes be used for carrying lenses, an arrangement that is to travel within the limits of our extension box or supplementary back, just described. As the small camera is to be attached to and operated with, this front, it should be so constructed that the back of the former will fit into a recess in the latter and form a light-tight joint.

The foundation is a piece of thin board in which an aperture is cut about the size of, yet large enough not to in any way obstruct the full capacity of, the opening in the back of the small camera. If the edges of this aperture are beveled there should be no danger in this particular. Around the margin of this foundation or backing is nailed a frame of half inch strips, forming the recess to receive the back of the small camera. Other strips to form a small raised edge around the inner edge of the aperture in the backing will assist in keeping out any stray rays of light that might enter at that point. To give this recessed front arrangement sufficient depth of body to insure its moving smoothly and without binding, thin strips from two and one-half to three inches wide are nailed, box fashion, around the four outer edges as shown in detail of the drawings. The frame portion may be located in the center or near the front or back of this casing, its position being regulated by the focus of the lens used. When finished the outside dimensions of this casing should correspond with the inside measurements of the box, or supplementary back, with just enough play for safety.

In use the back of the small camera is pressed in place against the front board and it will probably be well to provide a fastening to hold the two firmly together. The removable strip of wood across the front of the box as shown in the illustration, affords a rest for the run, or extension of the camera. As this front board carrying the small camera is changed to varying positions, the latter slides along this strip of wood, the run occupying a recess cut for its accommodation. By this means the camera is held level when used either in a horizontal or vertical position. The depth of the box should be so proportioned that the rack and pinion of the small camera comes outside this strip to permit all desired adjustments.

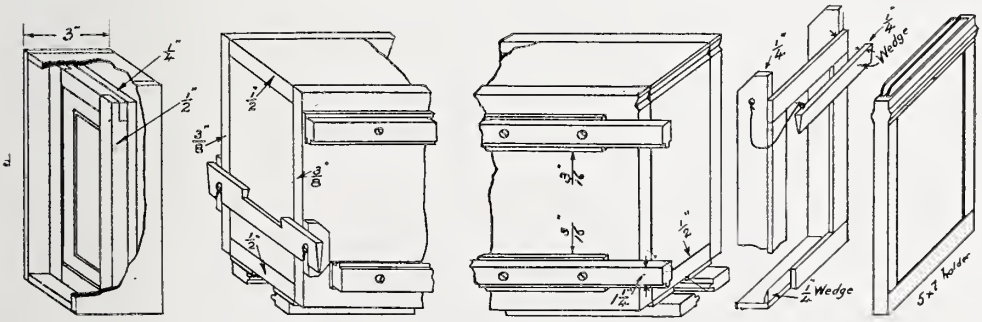
The apparatus, as now assembled, should be light-tight with the exception of a possible leakage around the outer edges of the recessed front. To remedy this, a strip of closely woven black cloth is utilized, forming what is, in effect, an improvised bellows, but in reverse position. One edge of the cloth is tacked around the outside of the front of the box near the edges, extending far enough inside and back to be tacked also to the edges of the recessed front when the latter is at its extreme range. The cloth strip has, of course, its two ends sewed together forming a tapering tube, before being tacked in; and, for the sake of uniformity I covered the box with this same material.

We are now ready to rest what has been so far constructed upon the tripod. What is known in view camera lingo as the "bed" is provided by taking a piece of half inch board, six by fifteen inches, and boring several holes along a line central thereto, so that the camera outfit may be balanced upon the tripod in different extensions. Upon experimenting it may possibly be found that one hole serves all requirements. An ordinary carriage bolt may be used in place



of a tripod screw to fasten this board to the tripod head. Next, strips about one and one-fourth inches wide are cut from some half inch tongue-and-groove lumber. The tongue-and-groove material used for hardwood flooring is only three-eighths of an inch thick and presents a neater appearance than the more common half inch lumber. Two of the grooved strips are nailed parallel on the board forming the bed just described and two of the tongued strips to each of the two sides of the box, so that the latter will have guide strips to enable it to be used on the run or bed in either a horizontal or vertical position. Of course the manner in which these strips give a sliding adjustment to the box is easily understood, and it is obvious that they hold the box securely to the base, although permitting the former to be shifted in position or removed entirely, at will.

A dead black paint is applied to all surfaces that might reflect light upon the sensitized plate. This is best put on before the parts are permanently joined; in fact, it is advisable to avoid putting the parts together permanently until one is quite sure everything is right. My own haste in this direction necessitated my taking things apart from one to three times, not anticipating certain adjustments. It must be remembered, for example, that in accommodating a larger plate one is dealing with a wide angle. This means that the lens must be such a distance from the extreme edges of the opening in the back of the small camera that the edges of the latter will not cut any part of the image falling on the larger plate. In taking care of this requirement one is liable to meet trouble in another direction, if the adjustment is not exact. With the back arranged just right, the end of the horizontal running board may still show a little on the ground glass, but, by using the rising front of the small camera,



a very little change of the lens from its central position will generally give a clear field. These difficulties need be apprehended only at the infinity focus. As the bellows is extended for near objects there will be found ample working margin in this particular. In my case the back of the small camera, as it is held in the front of the extension box arrangement, is in good position for infinity focus when an inch and one-half from the plate. When this point has been fixed satisfactorily, it would be well to nail a couple of thin strips on the inside of the box to serve as a stop to this front in which the small camera is fitted, so that future adjustments can be more easily and quickly made.

Finally, as is quite apparent, this piece of apparatus, the result of our love of labor, or rather labor of love, can be utilized as a complete camera by simply fitting a lens board to its front in the usual way. If the cloth is quite light-proof, the front can be drawn beyond the limits of the box section and attached to a small platform, the latter arranged to operate with the tongue-and-groove as with the other, the draw so secured being about ten inches. The wire handles shown in the photograph as attached to the front board, are used to regulate the position of the latter and are intended to be operated from behind the instrument. The draw obtained with the outfit described, when the edges of the front board are flush with the front of the box and the small camera, fully extended, in place, is about thirteen inches. The principles of camera construction, when reduced as above to a simple form for home application might be employed in the construction of apparatus for enlarging, reducing, lantern slide making and the like. Exeunt.

PARAGRAPHS PHOTOGRAPHIC

Kindly Contributed by Our Readers

UNMOUNTING DRY-MOUNTED PRINTS: A customer brought in a number of amateur prints, some of them mounted and some not, and wanted them all placed in an album in a given order indicated by numbers on their backs. When we came to separate the mounted ones from their mounts the fun started, they had been fixed down with mounting tissue. Soaking did no good, they wouldn't peel off worth a cent, and what could we do? The same afternoon a demonstrator came in and, learning of our difficulty, at once showed us how to do it. Taking one of the mounted prints he moved it around about a foot above the lighted gas burner that we use for making paste, holding it face up and horizontal. In less than a minute the print started to curl away from the mount, it was soon entirely free without any damage to either itself or the mount.—S. D. F., Minnesota.

MAKING FORMULAS AVAILABLE: Whenever I come upon a good formula, one that I feel may come handy some day or one that I wish to try when opportunity presents, I copy it on a card and file in a small box of suitable size. I file them in alphabetical order, using the name of the item as the filing key.—Russell Waldo, Indiana.

CAMERA CRAFT

A PHOTOGRAPHIC MONTHLY

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Simply To Explain

Mr. Hood's article, "Ray Screens Used in Multiple," in our last issue, was written on the eve of the author's departure for a short trip. Expecting that his return would permit of his going over the printer's proofs, we ourselves delayed doing so until too late. Considering these circumstances, the errors, which are all our own, are surprisingly few and unimportant, thanks to the care and exactness of the author. None of them can possibly mislead the reader and we mention them only to absolve Mr. Hood from any suspicion of carelessness. "400" and "1586," used as totals in the formulas under the first two illustrations, should read 405 and 1572 respectively. On page 146, the thirteenth line from the bottom should read Cramer Spectrum instead of the plate mentioned; and, in the twelfth line from the bottom of page 148, the figure "7" should be an 8 instead. The first two errors were made in copying the data used in the titles from the backs of the prints, and the other two were made in retyping part of the article in order to incorporate a little additional matter that Mr. Hood supplied at our suggestion.

War Time "Perils of An Amateur Photographer"

Samuel Adelstein, an enthusiastic amateur photographer, a native son, a Director of the California Camera Club, and one of the Board of Governors of the Civic League of Improvement Clubs and Associations, recently had an interesting experience, one that might be termed "Perils of a Photographer".

Mr. Adelstein, while crossing the bay on the Key Route boats, late in the afternoon, indulging in a few "shots" at the sea gulls with his reflex camera. Bright and early next morning, one of Uncle Sam's Secret Service operators presented himself at Mr. Adelstein's home, charging him with having, the day before, "taken photographs of the fortifications on Goat Island!" and demanding the negatives. Mr. Adelstein took the gentleman to his workroom and showed him the sea gull negatives. Profuse apologies were tendered and the explanation made that the Secret Service Department ran down every report that was given it. In this case it seems that a somewhat nervous and zealous citizen, seeing Mr. Adelstein photographing while passing Goat Island, got it into his head that photographs were being taken that might be of value to the enemy, and shadowed the unsuspecting photographer to his home, immediately reporting to the Secret Service Department. In reply to Mr. Adelstein's query as to why this nervous citizen did not speak to him at the time, thus saving himself worry, the Secret Service man said, "The nervous citizen was afraid that if he approached you, you might throw the negatives into the bay." In these war times it behooves the photographer, be he amateur or professional, to be careful about "shooting" with his camera in the vicinity of Uncle Sam's preserves.

Let Us Try To Be Consistent

The average photographer, be he amateur or professional, is somewhat inclined to overwork a particular style or treatment. There is the professional who makes everything with a white background; or, perhaps he favors the dark one. Seemingly, he has no inclination to harmonize the ground with the subject, even when the matter is left entirely in his hands. If the drapery is dark and the lines difficult to handle, a dark ground makes for simplicity and concentration; while, with light drapery and pleasing lines, a light ground seems advisable. Then there is the professional who pictures all his sitters as leaning forward and into the picture space, suggesting a window with a flower box below that necessitates this position to the side. This particular pose of the head and shoulders is entirely foreign to not a few people, as any of us can testify after observing the behavior of our friends. Some, quite a number, will be found who persistently assume the more restful pose. And so on through a long list of mannerisms, if such they may be called.

And the amateur has his own inclinations to persist in some particular practice, that is not always consistent. There is the one who must always show an expanse of sky above his landscapes, let it matter not whether doing so carries out the feeling of the picture, or otherwise. If the intention is to express the idea of "all out-doors" as one man puts it, well and good. If the spirit of the scene is that of freedom, the open country, sky above the landscape is desirable. If the interest lies along the path or stream at our feet, the sky is not wanted. Another worker wants to make everything soft and diffused alike, regardless of the feeling he wishes his pictures to convey. Some subjects demand good definition, at least enough to suggest texture in the most important parts, while others are quite pleasing rendered in all the charm of the soft focus effect. And the same can be said concerning quite a number of like procedures that individual workers are all too prone to follow rather blindly.

Would it not be a good idea for each of us to question our work a little more closely? Do we do this or that for some definite purpose or is it simply done because we thought we might add to the artistic effect? If a light background is used we should be able to say that it was better suited than a dark one. If the image has been softened we should be able to say that the result is better than would be the case were the image sharper. In other words, let us be consistent, for truly, "Consistency, thou art a jewel".

A Correction

Accidentally, the titles to the pictures of "Trilliums" and "Liverwort," at the bottom of page 155 of our last issue, became transposed. The number of readers who have called our attention to the error is most gratifying as it shows a degree of interest in wild flowers, as well as in Mr. Bieseman's article, that we hardly expected to find existing.

"The faults of a work of art are the faults of its workman, and its virtues his virtues."—JOHN RUSKIN.

A PHOTOGRAPHIC DIGEST

Edited by H. D'Arcy Power, M. D., Burlingame, California

Ortho Plates and Light Filters

For all-round photographic work, a complete color correction is generally regarded as impracticable. It necessitates the use of a deep color screen, which prolongs the exposure considerably, and of red sensitive plates, which can only be handled in complete darkness or in a light that is very little removed therefrom. The consequence is that non-orthochromatic plates are still used for the many purposes for which they are quite suitable, though a great deal of amateur photography is done with orthochromatic emulsions. When we remember that practically all the roll film made is orthochromatic, and that orthochromatic plates of various brands enjoy a great popularity, there can be little doubt that, as far as the amateur is concerned, more exposures are made on color-sensitive plates and films than on those which do not possess that quality.

If such plates (and in what follows the word plates is used as including films) are exposed without a light filter of some kind, very little is gained. It would require an expert to pick out of a number of negatives those which had been taken on ordinary and those on orthochromatic; and even the expert might be puzzled or wrong. To understand this it is necessary to consider the fault for which orthochromatism is a remedy.

The light to which our eyes are most sensitive is yellow and yellowish green; they are less sensitive to bright red and to blue, and much less so to deep red and violet. Therefore, a patch of the most intense violet-blue that could be got, seen on a background of equally intense yellow would form a contrast of a powerful character, the violet appearing dark on a bright ground.

As every photographer knows, this is not at all parallel with the result on an ordinary plate. To the yellow and yellowish green it is almost blind, to blue it is very sensitive, to violet also it is sensitive, and there are other rays, which the human eye cannot perceive at all which affect the plate powerfully. These rays are called the "ultra-violet." To red light, also the plate is insensitive, so that light of this color can be used to illuminate a dark room.—The expression "illuminate a darkroom" is not quite the bull it seems. A "darkroom" must be dark to the sensitive materials that are to be manipulated in it; provided this is so, it cannot be too light to the eyes.

Orthochromatic plates are coated with an emulsion which, by means of certain dyes, has been made more sensitive to green, yellow, and sometimes to red, than before. But although this is the case, these dyes are not able to give to the emulsion the same sensitiveness as the eyes possess. It is still very much more sensitive to blue as compared with yellow; in fact, the difference is still so great that the advantage of the dyes is almost entirely hidden, as has been already mentioned. It is to remedy this state of things that a light filter or color screen is used.

The fact is sometimes overlooked that the photographer has a very useful color screen in the lens itself. Glass is comparatively opaque to the ultra-violet rays just referred to, so that they do not play so large a part in photography as they would do, for example, if our lenses were made of quartz, which is much more transparent to them. The atmosphere also absorbs a great deal of the ultra-violet light which reaches it from the sun.

In order to make the photograph show colored objects in the same strength of light and shade as the eye sees them, a plate must be used which is sensitive to light of all the colors to which the eye is sensitive; and we must also interpose in the path of the light a light filter which will absorb ultra-violet, violet, and blue rays to such an extent that the excess of sensitiveness to such light which is possessed by the orthochromatic plate is counterbalanced.

It might be supposed at first that all that need be done would be to adjust the light filter to the plate so that their combined action was to get exactly and always the same effect as is seen by the eyes. But while this is perfectly possible, and indeed work with such a combination is done daily, it is open to the objection that the plates can only be used in darkness, or almost darkness; while the light filter prolongs the exposure necessary to such an extent as to make hand camera work, except under the most favorable conditions, very difficult. So that, in ordinary everyday photography, it is usual to resort to a compromise.

Orthochromatic, or isochromatic, plates have their sensitiveness to green and yellow increased very much, but are still only slightly sensitive to red. With such materials, therefore, we can use a fairly bright red light in the dark room,provided it is the right sort of red, that is to say, a deep ruby and not an orange. Plates that are sensitive to red as well are called "panchromatic". We see, then, that the light filter used with orthochromatic plates is not one which makes the rendering absolutely accurate, but one which gives a perceptible improvement without causing too great an increase in the exposure.

The question we have to determine, therefore, is how far to carry the compromise, and it is evident that this will depend on the nature of the work to be done. The writer cannot refrain from putting on record his opinion that, for every photographer, except the mere beginner, where the prolongation of the exposure is not a serious matter and other circumstances do not offer difficulties, the best result is to be obtained with a panchromatic plate and a color screen deep enough and of the right tint to make the correction complete; the compromise of the orthochromatic plate and not very deep light filter is only fully justifiable when there is a necessity for it. No one who has learned to use panchromatics for landscape work, for example, is ever likely to go back to other material.

In the "self-screen" plate we have an orthochromatic emulsion which has been dyed so as to act to some extent as its own light filter. The consequence is it is impossible to make such plates as rapid as the simpler orthochromatic plates, since any light filter to act at all must cut off some of the light, and if it does that, must necessitate a longer exposure. If the light filter is in the emulsion, this is equivalent to making that emulsion slower. Self-screen plates are therefore not amongst the fastest, but the dyeing is not carried very far. Probably they are about half as fast as they would be did they not contain the screen dye, so that they are still quite fast enough for all ordinary purposes. They can be used in the hand camera, and generally for work for which the very utmost possible degree of sensitiveness is not an essential.

But a light filter which does not prolong the exposure more than twice, although better than nothing, is still very far from giving as full a correction as we are often glad to have; and so it comes about that separate light filters, which can be put on the lens for use as required, are largely employed by photographers. They are not of any practical value with non-orthochromatic plates, as they increase the exposure to an inconvenient extent; but they can be used with advantage either with the ordinary kinds of orthochromatic plates or with self-screen plates.

It is customary to describe these light filters as "three times," "five times," and so on, according to the effect which they are supposed to have upon the exposure. We write "supposed to have" because the classification is only a very rough one; it may serve to indicate to which group a filter belongs, but is not by any means a reliable guide for exposure.

When a light filter has been bought, one of the very first things which should be done is to find out what increased exposure it entails in ordinary circumstances; that is to say, with daylight during the greater part of the day. Towards evening when the light is more yellow, and by artificial light when it is very much more yellow, the exposure increase necessitated by the filter is very much less; so much so, as far as artificial light is concerned, that it is not usual to employ a filter with it at all; the light is yellow enough, that is to say, it is comparatively poor enough in blue or violet, not to require it.

Although the orthochromatic plates of different makers are not quite alike in their color sensitiveness, they resemble each other nearly enough for the same color screen to be used with them indiscriminately. If the photographer uses self-screen plates he will find that a color screen, which is, say, a five

times screen with orthochromatic plates that do not embody any light filter, does not call for quite so great an increase as that. The difference, however, is a very slight one, and the actual increase should be found by trial.

It has been the writer's frequent experience that the increased exposure required is generally under-estimated by the maker or seller of the screen. Seven or eight times is the increase generally entailed by a "five-times" screen, if full advantage is to be taken of it. It is a curious fact that if the negative is in the least under-exposed the screen does not seem to exercise its full effect.

For work with self-screen plates a five or even a ten times filter is the most useful, as giving the most complete correction. For general work, of course, the plates will be used without any other screen than that which has been incorporated with them, but when this is not sufficient, then, within reason, the deeper the screen that is used with them the better.

With those orthochromatic plates which are not provided with any screen in the emulsion itself, and with roll film, it will be found that a two or three-times screen is often very helpful. It will enable the cloud forms to be got on a landscape negative with full printing value, and at the same time it does not make the exposure so long as to put hand camera work quite out of the question. It should be supplemented by one which calls for twice or three times as much increase, for work where correction is more important than keeping the exposure short.

It has been suggested that when a deep screen is needed, one weak one may be superposed on another, or a weak and a strong one used together. There is generally nothing to be gained by this, since the strong filter cuts out what the weak one cuts out and something besides. That this is so can be seen by holding one partly over the other; the two screens together, if their color is the same, and they only differ in depth, will not appear appreciably denser than the deeper screen by itself.

So far from a "six times" and a "three times" screen requiring nine times the exposure when the two are used together, the writer has found by actual trial that the two screens combined did not call for an exposure appreciably longer than was needed by the "six times" screen used by itself. And if the exposure necessary is not longer, it is evident that the screen cannot be serving any useful purpose. On the other hand, the use of two separate filters, with the thick glasses of which they are composed, is likely to affect the definition prejudicially.

When we come to the use of panchromatic plates, the screens used are almost sure to belong to the "K" series of Messrs. Wratten and Wainwright. These are made in three depths, known respectively as K1, K2, and K3, and, although they are primarily designed for use with the Wratten panchromatic plates, they are quite suitable for orthochromatic plates of any kind. The K1 screen, used with an orthochromatic plate, may be regarded as about a "three times" screen, and the K2 a "ten times." With the Wratten panchromatic the K1 increases the exposure something less than twice, the K2 about four times, and the K3 about six times; but the actual figures of the increase required by each batch of emulsion are given in the box with the plates, so that accurate work can be done at once without any need for experimenting.

With these plates the K3 gives a rendering which is approximately correct, and therefore should be used whenever circumstances permit. The K2 is intermediate, and is suggested as being suitable for portraiture, where to avoid the necessity for retouching, the color correction must be as complete as possible, though at the same time long exposures cannot usually be given. The booklet "Real Orthochromatism," published by Wratten and Wainwright, will be found to be a good supplement to this article, as it goes into the subject in a more advanced manner than can be done here, and contains much that is of interest on orthochromatic work, whether the reader is a user of the Wratten productions or not.

It is sometimes said that the use of a color screen is carried to the extent of over-correcting the rendering; but, except with experimental home-made screens, this is hardly likely. None of the commercial screens, unless deliberately made for that purpose, will over-correct; in fact, with the exception of the K3 and one or two special kinds, none of them correct fully. Photographers are so accustomed to an incorrect rendering of colors that they are apt to regard any approach to truth as an exaggeration, while the disappearance of color contrasts in a correct rendering may easily suggest that the orthochromatism has been overdone. It may be

overdone from the point of view of the impression required, but it may none the less be a perfectly correct monochrome rendering of the subject.

Inasmuch as orthochromatic work on the whole must be better than non-orthochromatic, by eliminating a defect inherent in the ordinary emulsion, one cannot but wish to increase the number of photographers who follow it. In the hope of doing a little towards this end has been the cause of this article being written, and if the writer has at times appeared to be teaching his photographic grandmothers to suck eggs, he asks these experts to forgive his presumption for the sake of the cause which he is advocating. —GEORGE BASSETT in *Photography*.

Photographing Coins and Medals

In the first place, it may be well to state that of the various metals, gold, silver, nickel, copper and bronze, silver and nickel are the easiest, and bronze the most difficult to photograph.

Silver coins present very little difficulty if moderately clean and untarnished. Discolored specimens demand a longer exposure, and reveal less detail in the finished picture. Though discolored coins should be rejected, we must not go to the opposite extreme and select specimens possessing a brilliant polish. These latter make patchy and more or less grotesque pictures. In our own work we have found that to dab an over-polished coin with a stick of putty overcomes all difficulties of this nature and in no wise injures the surface. Darker coins, those made of copper and bronze, often give great trouble, especially when they are stamped in low relief. In photographing such specimens as come under this head, it is very necessary to see that the light falls on the coins from one side in such a way that the shadows may be emphasized as much as possible. If a front light be used, the pattern is often non-existent in the finished print. When the coin is dark and the rendering of the detail somewhat indistinct, I proceed as follows: A stick of light brown chalk is scraped with a pocket-knife, and a trace of the powder rubbed into the recesses of the design. In this way the light and shade in the photograph are exaggerated sufficiently to obtain a clear impression. Of course, the merest trace of chalk proves ample: more will fill up the detail and cause greater harm than good.

A very simple method of arranging the apparatus and specimens is to place the camera on a table with a wooden box in front of it, one of the sides of which being parallel with the focussing screen. A white postcard is then pinned to the face of the box in the field of the lens. The coin to be photographed is stuck on to the card by means of a dab of plasticene. With medals no adhesive is needed, as the specimens may easily be held in position by pushing a pin through the top edge of the ribbon. The coin or medal casts a certain amount of shadow upon the card, but not enough to cause an unpleasant effect. In fact, the shadow is just sufficient to help on the idea of relief.

It is very necessary to see that the piece is not turned even in the slightest degree, away from the light. If it is, the whole face will be dark. If a medal be slightly tilted away from the light, the surface will look more like bronze than silver. A little dab of wax or modeling clay applied under the piece permits its being tilted sufficiently to face the light properly, and so give a better rendering of the metal. Reflectors, that is to say, sheets of white paper, are very useful for imparting brilliancy. A sheet placed at the lower left-hand corner is advantageous, but a mirror, used as a reflector, imparts a snowy effect.

The obverse and reverse of a coin can both be taken on the same plate, a convenience which coin photographers will readily appreciate. The reverse face of a coin can be photographed whilst a black card is fixed in the bellows to block out the left half view, and the obverse face afterwards taken when the black card had been placed so as to block out the right-half view. While the plan answers perfectly, equal exposures must of course be given, and the photographer needs to place some guide marks on the card in order that he may obtain the two views on the same level.

Finally, we may say that it is always preferable to photograph an actual coin rather than a plaster cast made to represent it. The latter seldom gives a correct idea of the material, its color, and its weight; but by following the simple suggestions made above, a fairly good representation may be usually obtained.—S. C. Johnson, M. A., D. Sc., in *The Amateur Photographer*.

NOTE: Attention is called to the method described in my article in the June, 1916,

issue on "Copying—Photographing Small Objects." [H. D'A. P.]

Better Bromides By Re-Development

It may be stated as an incontrovertible fact that on bromide paper, prints, whether made direct or by enlargement, may be improved, not only as regards the scale of gradation, but also in respect of colour. The operation is so simple, carried out as it is, not in the dark-room, but in full artificial or day light, that it behooves every worker who desires to get the best out of his negatives to give it a trial.

The writer has been interested in this branch of bromide work for a considerable time, and although all the available formulae were given a trial, regularity of result could not be depended upon. As in the case of the little girl, "when they were good, they were very, very good; but when they were bad, they were horrid." The horridness took the form of pinkish and brown stains extending over the greater part of the surface of fully fifty per cent. of the prints, and these stains could not be avoided, in spite of the most scrupulous attention to washing. It appeared, therefore, that the existing formulae required improving, and a somewhat extended series of experiments enables the following instructions to be given with a feeling of confidence that successful results will be obtained.

Two methods are open according as a cold engraving black or a warm black tone is wanted; for the first of these the following bleaching solution is prepared:

Copper sulphate	240 grains
Sodium chloride (cooking salt)	120 grains
Sulphuric acid	20 minims.
Water	12 ounces

Extreme nicety of weighing is unnecessary, and an avoirdupois half and quarter ounce may conveniently be taken.

The bromide print, made in the usual way with any developer preferred, fixed, washed, and dried, is soaked a few seconds in water, and then flowed with an ounce or so of the bleacher. After the image has been converted to a pale brown, the solution is poured away, and the print washed in running water for five minutes, longer washing being not only unnecessary but injurious. Here let it be said with emphasis that the bleaching solution, once used, must be discarded; to return it to the stock bottle, from a mistaken idea of economy, is to solicit trouble for the future.

The print is now ready for redevelopment, and one, and only one, developer may with certainty of result be employed, namely, acid amidol. The bleacher is acid, and practice has proved that the developer should be acid also. It is prepared at the time of using by dissolving a small teaspoonful of sodium sulphite (the anhydrous form is handy, owing to its ready solubility), in three ounces of water, and adding a small saltspoonful of amidol and about thirty minims of sodium of bisulphite lye; this is sufficient for a couple of 10x12 sheets. Theoretically, a second fixation should not be necessary, but tests with sulphide have revealed the presence of unconverted silver chloride, even when development appeared complete, and a brief immersion, say a couple of minutes, in the usual hypo bath should now be given; a sufficient wash completes the operation.

To obtain a warm black tone, the print is bleached in a solution consisting of a teaspoonful of common salt dissolved in a couple of ounces of water, to which is added one dram of sulphuric acid, and sufficient of a strong solution of potash permanganate to give it a rich crimson colour. As bleaching proceeds, the solution loses colour, and further small additions of permanganate are made until the image has entirely vanished. If sufficient salt and sulphuric acid are used, there will be no staining, and a wash for a minute or two will leave the print pure white and ready for redeveloping.

The same developer, acid amidol, is employed, but development will be rather slow unless the dish is carried out of doors and held under the sky, when it will be complete in about one minute if the daylight is good.

When the nature of the subject calls for a less intense colour than black, a rich dark sepia is obtained by the application of ammonium sulphide thirty minims to two ounces water, after the use of this bleacher.

The sodium bisulphite lye consists of:

Sodium sulphite, crystals	5 ounces
Sulphuric acid	6 drams
Water	10 ounces

The sulphuric acid is poured into the water, the sodium sulphite added, and the bottle is shaken until solution is complete. This lye is a valuable addition to fixing baths for negatives and bromide prints in the pro-

portion of about three drams per pint of bath.—David Ireland, *in Amateur Photography.*

Three-Color Screens

A somewhat curious process figures in a recent French patent, that of L. Paris and G. Picard. In the making of three-color mosaic screens for the production of color-screen-plates, it is proposed that grains of phosphorescent zinc sulphide should be used instead of starch grains. The grains are to be saturated with a concentrated solution of alum and then treated with ammonia in order to produce a thin coating of gelatinous alumina which can be stained by treatment in a suitable dye solution. These particulars are from the abstract of the patent specification published in the "Journal of the Society of Chemical Industry," which in an earlier number has made reference to an earlier patent of L. Paris and G. Picard, in which the claim is for the use of phosphorescent substances such as calcium and zinc sulphides, incorporated in the sensitive film, emulsified with gelatine or applied as a varnish for the purpose of reducing the necessary time of exposure.—*British Journal of Photography.*

Stereo Business Photographs

The efficiency of the stereoscopic photograph in replacing the carrying of actual articles by a commercial traveler has often been the subject of recommendation, but apparently the idea has taken more concrete shape at the hands of a firm, the Cortescope Company, of Cleveland, Ohio, which has designed a stereoscope of the portable type which, with a set of fifty to seventy-five stereo photographs, can be carried in a case of about the bulk of a quarter-plate folding Kodak. We read in the *Electrician* that the stereoscopic photographs made for this instrument are already being used by many firms in America as a means of dispensing with travelers' samples, and have been particularly used in showing purchasers details of pieces of machinery. In conjunction with the customary drawings of the engineering draughtsman, the stereoscopic photograph with its clear rendering of the relative positions of parts in even an intricate piece of mechanism is stated to have proved itself a most valuable means of satisfying customers that goods come up to the maker's claims.—*British Journal of Photography.*

Photographic Ink

A good reliable ink for writing on photographs, which may interest some readers, can be made up with the following chemicals, thus:

Potassium iodide	10 parts
Iodine	1 part
Gum arabic	1 part
Water	30 parts

The resulting ink will produce white lines on the background of the photograph.—P. E. O., *in Amateur Photography.*

Another Use For The Process Screen

The use of the process screen is generally limited to the production of half-tone negatives by the photo engraver, but another use was indicated in a lecture by Professor J. W. Nicholson, of London University given before the Rontgen Society recently. Professor Nicholson has been carrying out some researches which have involved photographing the spectrum, and has used the process screen to solve the difficulty of working out the exact contours of the image of the spectra on the photographic plate. Instead of photographing in the ordinary way straight on to the plate, he has photographed through a screen ruled with lines one hundred to the inch in two perpendicular directions, so that the resulting images are composed of very small dots extremely close together and forming a regular pattern. Anyone who has ever photographed the spectrum is aware of the importance of picking out the extreme boundary of visibility, but this becomes a perfectly possible thing to decide when it is a case of saying which is the last of the black dots to be seen in any direction all around the edge of the figure. By this means Professor Nicholson believes himself to have solved the trouble of the personal equation, and the results obtained by the method are much more accurately in correspondence with theory than those obtained by tracing the boundary on an ordinary photograph.—*Amateur Photography.*

The Adaptability of The Eye

A communication from the Research Laboratory of the Eastman Kodak Company, based in part on recent experimental work by Dr. P. G. Nutting, in the investigation of the behaviour of the eye in various degrees of illumination, reads as follows:

Within the past few years very consider-

able headway has been made in the science of illumination, and many interesting data have been recently obtained at the Research Laboratory of the Eastman Kodak Company upon the sensibility of the eye to various degrees of brightness and contrast in the field of vision. For its measurement and classification novel pieces of apparatus have been designed and made.

Illumination and photography are related in that they both depend on the laws of retinal reaction—the sensitiveness of the eye to light. And knowledge of the laws which govern the action of light on the eye must be of vital interest to the photographer.

Good lighting is that which produces good seeing, and the standard of good seeing is the ability to see detail with comfort and efficiency. Good photography is the proper illumination and exposure of a subject so that it may be reproduced with detail in highlight and shadow, with bright or dark surroundings comparatively subordinated and a gradation from highlights to shadows, so that a round object will be given the appearance of roundness on a flat surface.

Good seeing is the degree of sharpness by which we observe contrasts and definition in detail, with an amount of light that produces neither strain nor fatigue. It is governed by the amount of light reaching the eye. This in turn has to do with intensity, distribution, and colour, depending upon the brightness and contrast in the object, which is determined by its illumination and reflecting power, and also depends upon the intensity or brightness and position of the light-sources. The indirect lighting system now so much in vogue may be instanced as an aid to good seeing.

The eye is just like a camera in that it has a lens, it has a sensitive surface, and it has a box between the sensitive surface and the eye, which encloses the sensitive material. The camera, however, differs from the eye in that a camera exposes its film for a limited time; if the subject is dark the exposure is long and if it is light the exposure is short. The eye has to be exposed all the while to the brightness of the scene that is being recorded. The sensitive material in both the camera and the eye is necessarily destroyed by exposure; otherwise we should never know what was happening at all since no image would be produced. In the camera it is destroyed or altered once for all, and the exposure has to be calculated so that the necessary amount of alteration is produced. In the eye the sensitive material is created by the body as it is destroyed, and the amount of the sensitive material or the sensitiveness of the eye is adjusted according to the brightness of the light outside. It is as if in the camera, instead of giving a variable exposure, a fixed exposure were given and the sensitiveness of the material were altered according to the light.

The eye adjusts itself in the range of one million to one, and may be roughly divided into four levels of brightness as follows: The brightest, bright sunlight on a white surface; the indoor average illumination during the day, which is only one-one-hundredth of the brightness of bright sunlight outside; the average artificial illumination indoors at night which is one-one-hundredth of that indoors in the daytime; and, the level illumination at night outside, which is one-one-hundredth of that indoors at night. Tabulated as follows:

Bright sunlight out of doors	1000
Interiors in daylight	10
Interiors at night, artificial light	.10
Out of doors at night	.01

We thus see that out of doors at night it is roughly one million times less bright than out of doors in bright sunlight.

If we could imagine a pair of scales that would weigh anything from a ton of hay to a marble with equally high precision, and would swing perceptibly to the weight of a fly's leg, we would get an idea of the range over which the eye operates.

The brightness of objects seen by the eye depends upon its sensibility. We, therefore, speak of lighting in terms of comparative brightness or conditions of light. The actual brightness of an object is relative to the brightness it produces. An illuminated headlight makes a feeble flicker at midday compared to its brilliancy at midnight.

In order that the eye may adjust its sensibility, there elapses a certain amount of time after the change in the brightness level of the objects around so that the eye has to take a certain amount of time to adapt itself. The iris diaphragm shuts and opens almost instantaneously to make a protection while the retina is adjusting its sensitiveness. In adapting itself to a small change it acts quickly, but when going from bright sun-

light to darkness it requires about half an hour to adapt itself almost completely; total sensibility, however, is not reached until the end of an hour or so more. Where the contrast is less severe, as in passing from a room brightly lighted by artificial illumination to a dark room the time of adaption is considerably less, about five or ten minutes. The sensitiveness of the eye when coming from darkness into sunlight decreases for about an hour. It is found experimentally that the retina takes longer to grow in sensitiveness than it does to lose sensitiveness, so that if a light varies rapidly from bright to dark, the eye loses sensitiveness as the light becomes brighter, and does not recover so much as the light becomes darker, so that you get a diminishing sensitiveness when there are alternate bright and dark periods, as when passing along a street at night lighted by street lights.

In viewing or focussing interiors the best results will be obtained if the eye is stepped down from the high-lights through the halftones to the dense shadows, giving it an opportunity to accommodate itself to the steep drop in intensity between the extremes. It will perform its work more quickly and with less fatigue than if the change was made direct from the highest to the lowest, the detail will appear more quickly and the eye will be sufficiently accomodated to work at maximum efficiency.

Lighting contrasts vary considerably in living rooms, workrooms and offices, but the sensibility of the eye to contrast has a wide working latitude, and, if exacting work is not being done, the general brightness may vary from one to a hundred degrees without discomfort. Where the work demands close attention, the best possible adjustment of light should be made, one that is equal to good interior daylight lighting must be maintained or created by artificial illumination.

The retina resembles the photographic material in another respect in that it can only render a certain limited range of contrasts, and if the contrast is too great for the eye to be able to bear it, discomfort is produced. In the same way a glare spot, which is an area of excessive brightness, makes the eye very insensitive to other objects, which is very important in dark room lighting. On entering a dark room we "get our eyes" much more quickly when we try to pick out objects than if we merely close the eyes, a common practice. If, instead of stepping immediately from a bright illumination into a darkened room, closet, stairway, motion-picture house, etc., a pause of only a few seconds were made, the eye would adjust itself sufficiently, so that we could proceed without stumbling or bumping into objects.

Contrasts are almost entirely due to two causes: differences in reflecting power and depth of shadow. Shadows will also tend to depress the sensibility of the eye. Excessive contrasts should be avoided, for the reason that the eye has not been sufficiently developed to accommodate itself to them. The contrasts out of doors seldom exceed twenty to one in ratio of brightness.

Where contrasts must exist, as they do in dark rooms, every endeavour should be made to reduce the ratio of contrast to the lowest figure. This can be done by cutting down the necessary bright light to the least amount consistent with efficiency and by having an indirect safelight giving all the light possible consistent with safety.

Contrasts are created by bright lights, and bright lights are brightest when we look directly at them. A bright light deflected to the dark room sink, or bench, would still be as bright as it was before, but it would not appear so, and the eye would not be subject to the constant strain of adapting itself to an alternating brightness and darkness, not to mention the loss of efficiency. All lights should be kept out of the line of vision. Clear-glass electric-light bulbs should never be used in the dark room. They create very strong glare spots, and should be replaced by frosted bulbs, if they cannot be replaced by an indirect method of lighting. Quick changes in brightness should be avoided as far as possible. While they may merely produce discomfort, they can also produce temporary, and even permanent injury to the eye. Glossy finishes to woodwork, walls, etc., are another source of glare, and should be eliminated. As contrasts increase in intensity the eye instinctively demands a higher level of general illumination, which means that the eye seeks a compromise between the extremes of light and dark. The dark room should be neither unduly dark nor should it have any bright spots, safety and efficiency considered.

THE AMATEUR AND HIS TROUBLES

Conducted by Fayette J. Clute

Our Vacation Pictures

While vacation time is not quite here, it is none too early to give the matter of the pictures wanted, some consideration. As a general thing the average vacation taker, the one who uses a camera, either thinks he must be on the sharp lookout for artistic bits and pleasing landscapes or else he gets the idea that the camera is to be used to record the more or less unnatural poses and expressions of his friends and their chance acquaintances every time a few of them get together in the form of a "group.' The negatives the average vacationist makes run quite strongly in these two directions, and both of them are wrong. Making pictorial work is not a vacation job, although it may be a job done during a vacation providing the locality is one that has been selected for that purpose, preferably one that has been looked over and studied on a previous visit. Making groups of one's friends is another matter that should be gone about in a less hair-trigger manner. How much better it would be to explain that the shutter was not working properly, about nine out of ten times, and reserve the tenth for a group that could be made when just those wanted were included, when a proper setting was available, when some occupation, such as a rest by the roadside or a lunch under the trees, suggested a natural and interesting grouping. But to return to our vacation pictures, what is really wanted is something that will tell the story of the outing in a connected and logical manner. Just imagine you were writing a full account of it, something that was to be published in the form of an article or book. The pictures wanted are such as would be demanded by a publisher were he to print the story. And the illustrations he would want would be the ones that would themselves come pretty near telling the story without the written words. In writing the account of the trip you would dwell the longest on those points, those incidents, and those situations, that impressed you the most. These are the ones that should be photographed. Do not try to photograph each stage of the journey, do not worry because you cannot get a picture of the boat or train that you take as you start. Neither of these impress you very deeply. The story that you read in your favorite magazine is not illustrated in that way, although the lantern lecturer generally follows such a plan. But if the conductor, the train butcher or a chance acquaintance on the trip, should particularly interest you, interest you in such a way that you will remember him, for some time to come, as a quaint or lovable character, ask permission to make a picture of him in a natural and unconscious pose. The station where you disembark may be so very dull and uninteresting that its rampancy in that direction makes it impressive. Or it may be just the other way. But if it impresses you, make an exposure and try to secure a strong suggestion of its dusty bareness or of its more pleasing characteristic, as the case may be. And so on throughout the trip or vacation. If you will do this you will find on your return that you have a set of pictures that paint a story for your friends to enjoy, a set of pictures that permit you to tell of your experiences and your pleasures in the fewest possible words. And these few words will have an added interest, an interest that is worth while. Just think of the difference between showing an ordinary picture of a train and asking one to look at it while you told him of the quaint character you met thereon, and showing one a picture of the quaint character you met on the train and letting him imagine the appearance of the rolling stock. And, when the trip is a thing of the past, how much more satisfactory is the latter as a means of recalling to mind the pleasure of the trip. Try it once and I think you will agree that there are such

things as worth while vacation pictures that are neither uninteresting landscapes nor unsatisfactory "groups."

Using What We Have

Every spring the manufacturers' catalogues and the dealers' show windows cause a large proportion of us no little longing and regret because we cannot purchase the latest in cameras and lenses, the equipment that will enable us to cope with any situation that is capable of being photographed. Of course, those whose purse, or their disregard for the contents thereof, permits so doing, can indulge this craving; but does the gratification have any great influence upon the work produced? Very rarely. These new cameras, these new models, are all very nice, and if one must have a new outfit it is well to get the best that one can afford. On the other hand, would it not be a good idea to try, just for one season, and see what is the best that can be done with the camera on hand. We know of one good worker who is still using an old 4x5 camera of the regulation view pattern, and he is doing excellent work. His exposures are all made with the camera on a tripod, he either uses a medium slow plate or an orthochromatic with a ray screen on the lens, and his negatives look like little steel etchings. Not that he tries to get everything needle sharp, but there is no indication of fog or veiling, no soot-and-whitewash producers, and no soft, sickly, negatives that try the soul in printing. He knows what his camera will do and he works within its limitations. He argues that if some workers can make a wide variety of good pictures with a pinhole, he certainly should be satisfied with a fairly good lens. He has reasoned it out that if another worker can achieve salon honors with enlargements made from hand-camera snaps produced with a camera having no rising and falling front or similar devices, he should be satisfied with an instrument having these features only to a limited extent. He feels that when the opportunities for using his old 4x5 box become so few that he must waste time looking for them, it will be time enough to look about for a camera having wider capabilities. And there is a good deal of logic in his reasoning. Providing, of course, that it is light tight and in working order, the old camera will make just as good a picture, under certain conditions, as the most modern and expensive one. Take the last issue of this magazine and go through its pages. How many of the pictures shown could not have been made just as good, or better, with a camera costing only a few dollars at second-hand? The fact of the matter is, not a few of them were so produced. And what is more to the point, the men who made these pictures are not losing any sleep over the fact that they will not start their spring work with a new camera and lens.

Kachin Developer

A Maryland reader has a bottle of Kachin developer, evidently in good condition, but without a formula for its use. Kachin is the trade name used by a British firm for Pyrocatechin, a developer that can be used in exactly the same way as pyro. In fact, it has the property of giving an olive—or brown-black image of the same good printing quality as pyro. While it discolors in use as rapidly or perhaps a little more so than pyro, it has not near the same tendency to stain the hands and clothing. Another thing, the discoloration of the solution in use is not particularly indicative of its early exhaustion, although, of course, once a certain amount of work has been done by a given quantity of solution, the activity of the latter decreases accordingly.

Soft Prints From Hard Negatives

A New York reader has been entrusted with a collection of old negatives from which he is expected to make up several duplicate sets of prints. These negatives, originally made quite hard for albumen paper requirements, are rendered still more trying by reason of their original yellow tone having evidently increased in depth to some degree. One plan is to use bromide paper instead of gaslight, another is to remove the print from the developer the moment the image starts to appear and allow development to finish in a tray of water, and a third plan is to subject the print to a weak bath of potassium bichromate after exposure and before development. Using one or more of these remedies should give our correspondent the softest obtainable prints. With such old negatives it is practically useless to try any reducer or other like remedy upon the plates themselves.

THE CAMERAMAN'S PAGE

Edited by Hal G. Hall

A Practical Department of Comment on Methods and Apparatus

Reflectors

In motion picture work, as in still portraiture, reflectors are almost indispensible when properly used and almost disastrous when abused, although the use of reflectors is necessarily very different in the two classes of work.

In using a large canvas reflector on exteriors in which the contrasts of light and shade are abnormally great, a common mistake is to place the reflector too close to the performers, producing flat, moon-like faces by more or less completely neutralizing the natural shadows. Perhaps even more reprehensible is the mistake, often made in an exterior scene, of placing a brilliant reflecting surface, such as an aluminum painted reflector, too low. So doing throws a great deal of illumination from beneath, resulting in a theatrical effect similar to that produced by the foot-lights on a vaudeville stage. Incidentally, in making a large canvas reflector it is a good plan to have one side a dull white and the other finished with aluminum paint. The white side is usually of ample reflecting power for use in bright sunlight, as when softening the shadows under hats. The aluminum surface, on the other hand, is often extremely useful in brightening up a dark corner at a considerable distance; and also when it is not practicable to put the reflector directly in the sunlight at the proper angle.

Perhaps the most frequent mistake made in using the comparatively small reflectors employed in such close-ups as window and fire-light effects, lies in the use of a mirror without sufficient diffusion. This, of course, results in harsh contrasts. Perhaps as simple a remedy as any consists in covering the mirror with cheese-cloth; if one or two thicknesses do not suffice, others can be added until the desired results are attained. In this connection, however, it should be borne in mind that direct sunlight is not so actinic, proportionately to the visual effect, as the diffused light from the sky. A striking example of this is shown in the results secured when photographing late in the afternoon with the high lights of direct sunshine on the subjects. The negative does not usually show the sunlight nearly as brilliant as it appeared to the eye. Thus a very delicate highlight of direct sunshine on a subject, well illuminated by diffused light, may be lost entirely in the picture.

In a future issue we will discuss other points in the use of reflectors, although printed instructions can entirely take the place of personal experimentation.

Movie or Speed Pictures

A contemporary publication in a recently begun "cinematograph" department explains that it is desirable, in buying a motion picture camera, to get one that permits the shutter to be set at a small opening to stop motion in subjects near to the camera. This is the wrong idea entirely. Of course, in Graflex pictures, it is desirable to "stop" motion. In motion pictures, however, the object is to register, not every particular frame without blur, due to movement, but to get a film that will show motion naturally. Even the eye can not detect rapid motion close to it, and if rapid motion is photographed so close up that it projects as a blur, cutting down the shutter will merely produce jerky motion. This point has already been discussed in this department.

Tinting and Toning

Those interested in toning and tinting motion picture film will find much of interest in the book, "Tinting and Toning Eastman Positive Film," published by the Eastman Kodak Company, price two dollars and fifty cents, net. This book gives detailed instructions for tinting, and formulae for toners using all of the commercially practical toning chemicals, including iron, copper, uranium, and sulphiding. There is also a vanadium formula, although vanadium chloride is prac-

tically off the market at the present. The result obtainable with each toning and tinting combination is illustrated with an actual piece of film, there being shown about forty of these, altogether.

Selig-Tribune Frame Line

The Selig Polyscope Company, 58 East Washington Street, Chicago, who issue the Selig-Tribune, as well as the Gaumont Company, publishers of the Mutual Weekly, desire the picture frame-line on the perforation instead of midway between, although the latter has practically become standard among producers of dramatic films.

A New Film

The Eastman Kodak Company has recently put on the market a new film, one appreciably faster than that previous made and with a heavier emulsion that requires double the time for complete fixing and washing. For best results, the Eastman Company recommends a development time of not less than ten to twelve minutes.

Coal Yards And The Like

A. L. Erickson, Editor, *The Rock Springs Shovel,* is desirous of securing photographs of coal yards handling Rock Springs coal, method of handling, equipment used, displays or other forms of advertising, the plants of large consumers, and kindred subjects. Mr. Erickson wants and will pay for such pictures as he can use to illustrate the publication he is getting out to promote the sale of Rock Springs coal, and our readers who have suitable subjects available should write him for particulars as to just what is wanted, advising what they think they can supply.

Eager For Aerial Work

The Southern California Camera Club may supply recruits for aerial photographic work in the United States Army if a plan now under consideration is put into effect. With the general wave of patriotism sweeping the country the club members have announced themselves as eager to offer themselves in whatever capacity they can best serve and it is believed an aerial photographic corps will be the result.

It was announced at the last club meeting that all members enlisting will be exempted from club dues during the time of service. E. Radike Stancliff, was the first member to enlist, having joined the United States aerial reserve.—*Los Angeles Express.*

The Central In New Quarters

The Central Dry Plate Company has just bought the plant and property, covering over seven and one-half acres, formerly occupied by the M. A. Seed Dry Plate Company at Woodland, Missouri, a suburb of St. Louis. The pure air and pure water of this location afford ideal conditions for the making of dry plates, and the Central Company is to be congratulated upon its removal from its former city location. The firm expects, when the alterations which are being pushed with all possible dispatch are completed, to have one of the most modern and best equipped factories for the production of dry plates in this country. As announced elsewhere, F. Ernest Cramer, who has severed his connections with the G. Cramer Dry Plate Company, has assumed the presidency and active management of the Central Dry Plate Company and this is an added assurance that the future product of the firm will be of the highest attainable quality.

Picture Exhibit at National Convention

The Secretary advises as follows: The picture exhibit at the National Convention this year will be passed upon by judges, not yet secured, who will be able to analyze them and put into concise and positive terms the points that they find therein. The pictures in the portrait class will be divided into three divisions to overcome the objection heretofore made that it was impossible for those who viewed the exhibit to determine which the judges considered the better pictures. Prepare your prints now or at least begin to prepare them. Do not put this matter off until the last minute and then send in any old thing you have on hand. One may enter three pictures in the portrait class and three in the commercial class. There is no ruling as to size or style, and they may be framed or unframed. All exhibits must be packed and marked carefully. The Association will not be responsible for those lost.

INTERNATIONAL PHOTOGRAPHIC ASSOCIATION

The Post Card Albums

Contributors to the postcard albums can, if they so desire, give brief descriptions of the pictures on their cards and these will be incorporated in the list of titles that goes with the route list under separate cover from the albums. Contributors to the album should send in five or six cards at once and attention is called to the fact that this number can be increased with a letter, all not to exceed an ounce in weight, going for a two cent stamp.

Very truly yours,

JOHN BIESEMAN,

Postcard Album Director.

Hemlock, Ohio.

Name and Address Wanted

A. W. Hare, I. P. A. 4278, Iroquois, Ontario, Canada, advises that he has recently received an exchange of six or eight postal studies with no name attached, the package bearing the post mark of Oakland, California. Mr. Hare is unable to forward return exchange and would appreciate the name and address of the member sending him the cards.

Officers of the I. P. A.

F. B. Hinman, President, 1369 South Washington St., Denver, Colo.

J. H. Winchell, Chief Album Director, R. F. D. No. 2, Painesville, Ohio.

Fayette J. Clute, General Secretary, 413-415 Call Building, San Francisco, Cal.

Charles M. Smythe, Director Post Card Division, 1160 Detroit St., Denver, Colo.

James B. Warner, Director, Stereoscopic Division, 413-415 Call Building, San Francisco.

NOTE.—All stereoscopic slides sent to Director for the circulating sets must be mounted, tltied, and show the maker's name and I. P. A. number on the back of mount. Notify the Director how many mounts can be used, and a supply will be sent you by return mail.

George E. Moulthrope, Director Lantern Slide Division, Bristoi, Conn.

Edward B. Cowles, Secretary Lantern Slide Division, 11 Oak St., Bristol, Conn.

Answers to inquirles concerning membershlp and membershlp blanks wlll be suppiled by the State secretaries. Aibum dlrectors are at present actlng as State secretaries in such of their respective States as have as yet no secretaries.

NEW MEMBERS

4345—G. M. Nicholson, 46 Gadsden St., Charleston, S. C.
3¼x5½ and 5x7, developing papers, of Philippine, Guam and Mexican views, bathing girls, figure studies, draped and undraped; all from original negatives. For same. Only first class work accepted and returned. Class 1.

4346—E. McClymont, 202 Robert St., Toronto, Canada.
1⅝x2½, 3¼x4¾ and 4x6, developing paper, studio portraits, landscapes, pinhole pictures, lake and city views, bathers, etc.; for wild animals, silhouettes, marines, figure studies undraped. Class 1.

4347—Heien Mittan, R. F. D. 3, Central City, Iowa.
Class 3.

4348—Konstantin Brener, P. O. Box 849, Hendersonville, N. C.
5x7 and post card, developing paper, of nude and semi-draped studies of the female; landscape and outdoor views; for female studies, views of mountains, seashore, etc., anything outdoors. Class 1.

4349—Floyd M. Williams, Box 444, Ames, Iowa.
3¼x4¼ and 3¼x5½, developing paper, of sunset, moonlight, bathing girls and figure studies. For the same. Class 1.

4350—Willis Lawrence, 251 Kingsbridge Road, New York, N. Y.
5x7 and 3⅞x5½, developing paper, of landscapes and travei. Class 2.

4351—C. H. Knowlton, P. O. Box No. 33, Vallejo, Cal.
2¼x3¼, developing paper, of Navy Yard pictures mainly. Class 2.

4352—Ben O. Trafford, Box 57, Houghton, N. Y.
2½x4¼, developing papers, of scenery and general subjects; for scenery. Class 1.

4353—O. N. Pruitt, Newton, Miss.
Class 1.

4354—Miss Grace Irving, Point Reyes Station, Marin Co., Calif.
3¼x4¼ and 3¼x5½, developing paper, of landscapes, ocean views, animals and miscellaneous subjects. For the same. Single weight paper only. I can send colored prints. Class 1.

4355—C. S. Beardsley, 1013 Amadora St., Vallejo, Cal.
2½x4¼ and smaller, developing paper, general views, clouds, tinted and plain, home portraits, children; for nude subjects, scenery, mountain views, marine views and clouds. Class 1.

4356—W. J. T. Williams, 11 Rose Street, Walkerville, Mont.
3¼x5½, developing paper, mines and mountain scenery; for landscapes, snapshots, or anything of interest. Class 1.

4357—Harry A. Brodine, 854 Union Ave., Bronx, New York City.
4x5 and 8x10 prints on smooth or glossy paper, of landscapes, marines and anything of real interest with interesting particulars noted on the back of each. Aiso artistic nude and draped studies. Exchange the above for first class work of the same description, in sets of six or more at a time. Class 1.

RENEWALS.

2894—John F. Fensei, R. F. D. No. 9, Montpelier, Ind.
Postcards, of landscapes, storm wrecks, wlld animals, etc., for anything of generai interest. Class 1.

3329—Geo. R. Bunn, 1571 W. First St., Los Angeles, Cal.
3¼x5½, developing papers, of National Parks, big trees, wild mountain scenery, figure studies, and miscellaneous: for similar subjects and good genre or anything artistic. Good work wanted and given. Prefer prints rather than postcards. Class 1.

4090—John W. Cook, 2511 Dwight Way, Berkeley, Cal.
Stereoscopic views of miscellaneous subjects. Class 1.

4210—E. D. Ayres, care The First Trust Co. of Hilo, Ltd., Hilo, Hawaii, T. H.
Class 3.

4275—Albin Jacobson, Howardville, Man., Canada. Class 3.

CHANGES OF ADDRESS

2151—Pres. Fidler, Westwood, Cal.
(Was 1351 East 38th St., Oakland, Cal.)

3358—Asa L. Brower, Box 23, Ustick, Idaho.
(Was care Forest Service, Ogden, Utah.)

4156—Thos. P. Mason, 3709 Cambridge Ave., Rosedale, Kan.
(Was 602½ Southwest Blvd., Rosedale Kan.)

4292—Morgan Bryant, Campaign, Tenn.
(Was Creek, Tenn.)

4308—Mrs. Mabel Meek, care Aluenite Mills, Marysville, Utah.
(Was Murphy, Ore.)

4310—C. D. Steves, Klickitat, Wash.)
(Was Lake Stevens, Wash.)

CLUB NEWS AND NOTES

Club Secretaries and others will oblige by sending us reports for this Department

California Camera Club

The California Camera Club of San Francisco has been particularly active the past year, with every prospect of this condition being maintained indefinitely. Monthly illustrated lectures with slides or motion pictures, or both, are regularly held in a large hall, the series so far this year including "Scotland," by J. Wilson Lundy, "Glacier National Park," by R. A. Murray, "A Trip Through China With a Moving Picture Camera," lecturer, Dr. Jno. L. Lawrence, the last, for April, being Frank Splaight, of London, in wonderful impersonations of Dicken's characters. Demonstrations on various photographic subjects have been frequent, the last being given during the club's outing to Palo Alto and Leland Stanford, Jr., University, on April twenty-second, when A. B. Clark, Professor of Graphic Arts, talked on pictorial composition. Dances at the club rooms and dinners at more public places are also features of club activity that many of the members enjoy.

Pictorial exhibits of work by the members are regularly hung in the club's reception room at 833 Market Street, and frequently the work of others is displayed. Among the active members of the club whose work was shown at the recent exhibition of the M. A. A. A. Camera Club at Montreal, are J. A. Hickey, W. H. Rabe and W. H. Stephens. Outings are arranged for every month. On Saturday evening, March tenth, the members enjoyed themselves at the suburban home of Mr. and Mrs. Edward H. Kemp in Sausalito and on March eighteenth an enjoyable outing was held in the vicinity of the home of the late Joaquin Miller at Dimond Canyon. Leaving, June ninth, the club will have a nine day trip to Yosemite Valley. This is an annual event that the members and their friends look forward to with pleasant anticipation.

Oregon Camera Club

Tuesday evening, March twentieth, the Oregon Camera Club held the second of its instruction course lectures. This took the form of a demonstration in the coloring of photographs in oils by Fred P. Luetters of the Winter Photo Company. The next following six weekly lessons in the course will be devoted to developing, printing and then on to enlarging. The club will hold an exhibition of members' pictures on May first to fifth inclusive and there will be separate classes to accommodate hand-colored photographs and natural-color photographs on both paper and plates.

The Montreal Exhibition

The M. A. A. A. Club's Eleventh Annual Exhibition, held the last week in March, called forth exhibits from many parts of Canada and the United States, the artistic quality of the work submitted being most gratifying. William Brymner, President of the Royal Canadian Academy, with Sidney Carter, and T. H. Dupras, acted as judges. The one hundred and eighty-six pictures were

divided into five classes, Portraiture, Landscape, Waterscape, Architecture, and Genre, a silver and bronze medal being awarded in each class. The two winning first and second prizes in each of the five classes respectively were as follows: W. G. Fitz and T. W. Kilmer, W. H. Rabe and C. W. Christiansen, Albert Kelly and W. G. Fitz, O. L. Griffith and W. H. Rabe, and, W. G. Fitz and O. L. Griffith. Of the California workers, Messrs. Doolittle, Edwards, Herrick, Nickey, Kales, Rabe, and Stephens were represented by a total of fifty-five prints; almost thirty per cent of the total accepted.

Rendition of Color Value

At the meeting of the Southern California Camera Club in its quarters in the Lyceum Theater Building, Los Angeles, Thursday, evening, February eighth, it was arranged to have a club outing in the near future to one of the near-by beaches in order to secure marine subjects for the coming monthly print competition, and recreation as well. A magazine article on the use of orthochromatic plates was read by Mr. Mansfield and a general discussion of the subject of color rendition in photography, followed. Prints by Mr. Hall exemplified the use of ordinary orthochromatic plates on a vari-colored subject, and others showing different color rendition on orthochromatic plates, used with and without filters, were shown. In one instance, the dark blue letters of a poster were rendered as a very light gray, while the yellow background was shown as a rather dark gray, an orthochromatic plate being used without a filter. Another example showed the results secured on the same plate used with a five-times filter, more nearly correct color value being achieved, the blue letters being dark, while the yellow background was relatively light. It was also explained why literally true color rendition is not always desirable and how different colors can be emphasized or subdued by the use of a combination of suitable ray screens and the proper orthochromatic or panchromatic plates.

OUR BOOK SHELVES

"Photograms of the Year 1916"

This handsome annual, the twenty-second yearly issue, reaches our desk quite late this time, but it upholds its reputation as a pictorial record of the best in photography for the year just past. As heretofore, the book is very well illustrated and exceedingly well printed; and, the pictures reproduced show that a most discriminating taste was responsible for their selection. Many of the illustrations are reproductions of pictures by our American workers and this gives the volume an added interest, if such be needed. Comment and discussion on the pictures is indulged in to a certain extent, so that the informative element is not overlooked. Tennant and Ward, publishers, 103 Park Avenue, New York, are American agents for the book, which can be obtained locally from Hirsch & Kaiser, 218 Post Street, San Francisco. The price in paper covers is one dollar and twenty-five cents and cloth boards one dollar and seventy-five cents, postpaid in both cases.

Photographic Apparatus Made At Home

This new issue, No. 158, of *The Photo-Miniature* represents a decided departure, one intended for that increasing army of amateurs who like to make their own conveniences or repair or improve their own apparatus. It gives selected working methods and diagrams for, among other things, transforming a Brownie into an all around speed work hand-camera by adding an f-4 lens, shutter and finder; for making a wire frame direct vision view-finder; various forms of lens shade; bellows for cameras or enlargers; fixed focus enlarging box; three-focus enlarger; fitting up enlarging room; making bolting-silk frame; simple actinometer; improved tripod head; cement sink; double tray; electric printing box; a lantern slide making camera and a nigro-style for working up negatives and enlargements. The diagrams amply illustrate the working instructions. Price only twenty-five cents. Obtainable from nearly all dealers or direct from the publishers, Tennant & Ward, 103 Park Avenue, New York.

NOTES AND COMMENT

A Department Devoted to the Interests of Our Advertisers and Friends
In it will be found much that is new and of interest

Reported by William Wolff

M. P. Kirkpatrick, chief operator for the Bushnell Studio, Seattle, recently entertained a number of friends at his home on Mt. Baker, seven miles from Seattle.

F. A. Held of Chicago is now manager of the Northwestern Photo Supply Company, Seattle.

Frank Nowell, the Alaska photographer, has opened a store and commercial studio in Seattle.

The Anderson Photo Supply Company of Seattle have opened a branch at 1518 Westlake Avenue, same city. They now carry the Ansco as well as the Eastman Kodak Company line.

The Northwestern Photo Supply Company of Seattle will move to its new Fourth Avenue location about May first.

Hirsch & Kaiser of San Francisco, report a large business throughout the coast territory in Mandorville oil colors.

E. O. Webb of San Jose, has built a two-story finishing plant, 30x40 feet, on his property at Second and Empire Streets.

C. A. Bowser is manager of the Kodak Department at the Emporium, San Francisco. Miss A. Walker is his assistant.

Miss Hilda Russell of the MacDonald Apartments, Los Angeles, is doing some fine work in oil colors for the trade in that section.

Premo Richardson has been doing the northwest the last few weeks.

The Oregon Camera Club of Portland entertained the writer March thirtieth, at its handsome new club rooms in the Elks' Building. The membership is growing rapidly, the rooms are well equipped and the enthusiasm seems to be most gratifying.

Jack Dietrich In Town

He must have been one of our Petaluma subscribers because he said something about "old roosters catching young chickens" or something of the kind, and our subscribers from up that way get poultry lore and photographic lingo mixed when they try to tell us anything. What he was reporting was the fact that Jack Dietrich and his wife spent a few days in town recently, the visit being an incident in a bridal tour of the Coast. Mr. Dietrich, was for many years with the Cramer people and later with the Morrison Studio in Chicago, where "Jack," as he is popularly known, has a host of friends and acquaintances.

Commercial Artists' Association

The Commercial Artists' Association of the Bay Cities is a newly organized body that includes in its membership list nearly all of the best known workers in this section. As an opportunity for much that is mutually beneficial is presented by this getting together of those doing designing and illustrating for commercial purposes, this new association should have the support of all the artists engaged in this line of work. Will White, the designer of our own cover, is the Secretary-Treasurer, the President being Sidney Armer of 417 Montgomery Street, this city.

An Announcement

We desire to announce the retirement of an official and employee of our company of Mr. F. Ernest Cramer.

Our friends and patrons may rest assured that the severance of Mr. F. Ernest Cramer's relations with this company will not from any conceivable point of view have the slightest effect upon our business. Our emulsion and mechanical departments have, for several years, been wholly and solely under the management of our Mr. Emile R. Cramer, ably assisted by our Mr. A. L. Milentz, and our sales department in the entire and sole discharge of our Mr. G. A. Cramer. All of these officers and employees will remain in the active service of the company thereby making certain that the same high standard of quality and service as heretofore will be maintained.

With our most sincere thanks for all past favors, and earnestly soliciting a continuance thereof, we beg to remain,

G. Cramer Dry Plate Co.

St. Louis, Mo., March 31, 1917.

Rexo Camera's Advantages

We have received a handsome little booklet that features the various points of merit incorporated in the Rexo line of cameras and as these are most interesting to the users of hand cameras and particularly those who may be contemplating investing in a new camera, we would suggest that the reader secure a copy. These will be gladly sent to any reader who will write for it, addressing Burke & James, Incorporated, 240 East Ontario Street, Chicago, Illinois. In writing you might also ask for an amateur catalogue if you have not already received one. As the book is very interesting, particularly as it contains a number of reproductions of some very good pictures, we would advise our readers to send for it at once.

A New Developer

The world was startled by the advent of the military "Tank" and its mission of destructive advance. The photographic "Tank" is in its own field of utility equally effective and its mission of peaceful penetration has been materially aided by the introduction of "Tabloid," "Tancol," a developer which is the result of the investigations undertaken by Burroughs Wellcome & Company, into the special conditions underlying the problem of tank development.

"Tabloid Tancol" Developer gives what is known as "pyro quality," but it is much better suited to the development of snapshots than the ordinary pyro developers, particularly in bringing out shadow detail before the high lights become too dense. It suits all kinds of roll films, flat films and plates and can be used with the greatest convenience and success in any make of developing tank or machine. If desired, it may be used for tray development with equally fine results. Like all "Tabloid" photographic products, it is compact and portable and keeps indefinitely in all climates, a recent report speaks of the production of two perfect negatives with "Tabloid" developer known to be thirteen years old. The time table furnished by the makers enables the most convenient strength of solution to be selected, for the capacity of the tank in use, and the actual development time noted according to the temperature of the solution and the kind of plate or film in use.

The outstanding quality in the negatives which "Tabloid" "Tancol" produces would entitle the introduction of this developer in peace time to be considered a noteworthy event in the photographic world, but during the turmoil of present conditions is a remarkable tribute to the enterprise of Burroughs Wellcome & Company. "Tabloid" "Tancol" is sold in cartons each of which contains material sufficient for the preparation of eighty-eight ounces of normal solution.

In New Quarters

Lasky's, the popular photographic and optical dealers of 814 and 816 Market Street, this city, have leased a larger store, about one hundred feet above their present location, 832 Market Street, that is being handsomely refitted for their early occupancy. With a larger store and an even more desirable location than their present one, their ever increasing business will be handled with greater efficiency and their customers better pleased, if that be possible. The new store will be occupied just as soon as alterations are complete, supposedly about the time this reaches the hands of our readers.

The Auto-Fixt Focus Camera

This exceptionally fine, little pocket camera is enjoying increased popularity, and the new prices of forty and fifty dollars is certainly meeting with the approval of the purchasers. This camera is now being equipped with the well known Wollensak Velostigmat lenses in two speeds which adds materially to its popularity. As the reader no doubt knows, this camera embodies a very simple mechanism which permits of the quickest possible setting of the focus before the camera is opened, and furthermore, as the camera is opened, the front moves automatically to the desired point where it locks. Room does not permit our going into detail as to all the desirable features of this new camera, but the reader is advised to write for a descriptive booklet being sent out by the manufacturers, Herbert & Huesgen Company, 18 East Forty-second Street, New York.

F. Ernest Cramer Makes a Change

On March thirty-first, F. Ernest Cramer severed his connections with the G. Cramer Dry Plate Company of St. Louis, to assume the Presidency and General Management of the Central Dry Plate Company of the same city. With his long experience in the manufacture and marketing of dry plates, Mr. Cramer will, beyond doubt, make for his new firm a place in the industry that will be of no small importance. His host of friends in the trade will join us, we know, in wishing him all success.

The Clanbury Lens

Such of our readers as are interested in a good anastigmat lens at a reasonable price should investigate the merits of the Eurynar and Clanbury lenses manufactured by Optische Anstalt G. Rodenstock, and sold in this country by W. J. Lafbury Company, 305 N. Fifth Avenue, Chicago. The Clanbury is a three-glass non-symmetrical anastigmat, working at f-4.5, making them especially adaptable to all classes of high speed photography. They are handsomely finished and mounted, the work being characteristic of the factory turning them out, this latter being one of the largest of the foreign optical firms. A request made to the agent, as above will bring information concerning this line and intended purchasers of a new lens should investigate their merits.

Illinois College of Photography

A number of the students attended the Eastman Schools of Professional Photography, held during the month of March, in St. Louis and Chicago. While in the former city, they enjoyed a trip through one of the large dry plate factories.

Several of the students are planning to take the Civil Service examination for Photographers, and are employing their time to good advantage in preparing for the test. One former I. C. P is holding an exceptionally good position as photographer with the Government.

Mr. Bissell, who is one of the State Directors of the Illinois Highway Improvement Association, attended its meetings at the State Capital last month. Mr Bissell assisted in the boosting for a sixty-million-dollar bond issue to be passed at this session of the Legislature. This will give Illinois four thousand more miles of hard roads.

Statement of the ownership, management, circulation, etc., required by the Act of Congress of August 24th, 1912, for April 1st, 1917, of CAMERA CRAFT, published monthly at San Francisco, State of California, County of San Francisco.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared Fayette J. Clute, who, having been duly sworn according to law, deposes and says that he is the Editor of the CAMERA CRAFT and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in Section 443, Postal Laws and Regulations, printed on the reverse of this form, to-wit:

Publisher, Camera Craft Publishing Company, San Francisco, California; Editor, Fayette J. Clute, San Francisco, California; Managing Editor, Fayette J. Clute, San Francisco, California; Business Manager, Fayette J. Clute, San Francisco, California. That the owners are Camera Craft Publishing Company, San Francisco, California; Harriette E. Clute, Trustee, Hanford, California; Romaine F. Clute and Clifford H. Clute, Beneficiaries, Mountain View. California.

That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are none.

That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

(Signed) FAYETTE J. CLUTE, Editor.

Sworn to and subscribed before me this twenty-second day of March, 1917.

SID J. PALMER, Notary Public, in and for the City and County of San Francisco, State of California. My commission expires December thirty-first, 1918.

CAMERA WANTS

Advertisements of the above nature shown below will be inserted under this heading at the rate of fifty cents each insertion, for twenty-five words or less; each additional word, two cents extra, cash with order. Those of positions wanted inserted free. No business advertisements accepted.

PORTLAND STUDIO For sale, first class reputation and location, doing a good business at good prices, positively not a run down place. Bargain at $1200.00. Address P. O. Box 414, Portland, Or.

CONDENSERS For sale, 12 inch mounted in brass, cost $59.50, sell for $35.00, perfect condition. V. A. U., care "Camera Craft", San Francisco, Cal.

FOR SALE Best studio in Los Angeles. For information address W. G. Hemenway, 710 Auditorium Bldg., Los Angeles, Cal.

MOVING PICTURE Outfit wanted for rent with option to buy. Write stating condition of outfit, rent price, etc. Address M. P. O., care "Camera Craft", San Francisco, Cal.

AMATEURS WANTED Nebraska, Wyoming and Western States to take views, coal yards, etc. For particulars address Rock Springs Shovel, 218 S. Wabash Ave., Chicago, Ill.

FOR SALE No. 6 Cirkut outfit equipped with Graphic rapid rectilinear lens; first class condition, sell cheap. D. A. Fisher, Inc., Memphis, Tenn.

FOR EXCHANGE A new quick 5x7 Verito lens costing $25.00 recently, for a 10x12 rapid rectilinear lens with Iris diaphragm. Address J. G. B., care "Camera Craft", San Francisco, Cal.

POSITION WANTED By kodak finisher or quick finish postal man; best references. C. W. B., care "Camera Craft", San Francisco, Cal.

FOR SALE Metol at $2.50 per ounce. Box 57, care "Camera Craft", San Francisco, Cal.

FOR SALE Only studio in largest U. S. Military Post, 8000 men. Steady portrait and postal trade all year. Unlimited out-of-door work. Plenty of amateur developing. Subagency for films and supplies. Excellent climate and plenty of light. Full necessary equipment. At least 2 men required to carry on the business. Full particulars and photos on request. No exchange considered. Terms cash, $2500.00 including 7 room residence on reservation near studio. Military privilege to own business in post worth more than price. Owner wishes to leave on account of injury. Address, Post Exchange Photo Studio, P. O. Box No. 213, Schofield Barracks, Hawaii.

SALE OR TRADE Series III No. 6 Goerz (Berlin) lens (8x10 Dagor) and also a Zeiss Kodak lens, F-6.3, 10 in. focus, in Century shutter. Both in perfect condition. Will trade for a IC, B. & L. Zeiss Tessar of 12 inch focus or will sell. Make offer. L. C. Bishop, 508 Dean Bldg., South Bend, Indiana.

FOR SALE Small ground floor photo studio with amateur supplies and finishing business. Good opening for young man or woman who understands the business. 5000 population, no opposition. 50 miles from S. F. Address Box 600, "Camera Craft", San Francisco, Cal.

FOR SALE 10x12 Ross Homocentric lens, f-5.6, 8x10 Velostigmat, Series I, f-6.8, 5x7 Hall Mirror camera with f-4.5 6½x8½ Heliar lens. Jack Wirtz, 3013 Bryant Ave. So., Minneapolis, Minn.

POSITION WANTED All around photographer, excellent amateur finisher, view and commercial photographer, printer and operator wants position. Konstantin Brener, P. O. Box 849 Hendersonville, N. C.

WANTED Expert printer for high class studio. None but careful fast worker need apply. Angvire Studio, Spokane Wash.

WANTED Tenax, coat pocket size. Quote lowest price. For sale 3¼x5½ Compact Graflex, genuine Zeiss lens. Will sell at bargain. Post Office Box 407, Milwaukee, Wis.

WANTED Goerz Dagor lens, f-6.8, 3½ inch focus, Compound shutter. Address Samuel Adelstein, 1834 Baker St., San Francisco, Cal.

FOR SALE Cheap or exchange. Thornton-Pickard shutter, 2 inch 8x10 Seneca camera, R. R. lens, Auto shutter. New Wold air brush, Model N, 2 sets scales, electric fan, flash lamp, also flash pan, print roller, ferrotype plates, printing frames, Cirkut frame, 38 caliber S. & W. revolver, No. 5 Heliar portrait lens, 6½x8½ Goerz Dagor lens. H. Gunther, 20 Monroe St., San Francisco, Cal.

FOR SALE Must sacrifice. My kodak and stationery store with fully equipped finishing department, nine miles from Los Angeles. Am compelled to leave here on account of my wife being unable to stand the climate. $1000.00 cash takes it—worth double. Address box 742, "Camera Craft", San Francisco, Cal.

FOR EXCHANGE $12.00 print-trimmer, new condition, for 2A or 3A folding film camera, 5x7 or 6½x8½ Conley or Competitor view camera, or lens with shutter. A. Sutherby, Wellsville, N. Y.

FOR SALE 7x17 Eastman Banquet camera, No. 5 Turner-Reich Series II lens, in Ilex Universal shutter, Century 12 foot tripod, also Northern Light No. 1. All above used but once. 3A autographic kodak with Cooke f-6.3 lens, in Compound shutter. Address Suzuki, Batttle Creek, Mich.

FOR SALE My 5x7 Seneca long focus camera and entire 5x7 outfit, at great reduction. Has been used very little, being too small for me. Exceptional bargain. H. B. Brubaker, West Reading, Pa.

FOR SALE Printing press with type, ink, etc., Fine for titling postals, printing name cards, envelopes, letter heads, etc. Half price. Write H. B. Brubaker, West Reading, Pa.

FOR SALE No. 2 Ansco Speedex camera, 3¼x4¼, f-6.3 lens, Optimo shutter, with plate attachment, plateholders, etc. Cost $65.00 or will exchange for 5x7 view camera. W. K. Waters, 623 Taylor Ave., Alameda, Cal.

WANTED Small motion picture camera, Multiflex enlarger and 9 inch condensers, also 5x7 lens. Kesslar, Box 96, Okmulgee, Okla.

FOR SALE Alamo motion picture camera with f-3.5 Tessar lens and tripod. Hawkeye Stereo camera with matched Zeiss lenses, plate back and holders. Also 4A Eastman Speed Kodak and case. The above are in perfect condition and go for half price or less. Write me for further information. A. L. Maxim, 116 4th St. So., Minneapolis, Minn.

FOR SALE $200.00 will buy studio, population 5000, three forts to work for. Must retire from business. Photographer, 807 Polk St., Port Townsend, Wash.

POSITION WANTED All around studio man, several years experience, flashlight, commercial, home portrait. Address R. W., care "Camera Craft", San Francisco, Cal.

CAMERA WANTS—Continued.

SALE OR EXCHANGE Goerz V. P. Tenax with supplemental lenses and developing tanks, 4A Kodak with Velostigmat lens in Multispeed shutter, Turner-Reich lens, Series II, 7 inch focus in Ilex Acme shutter. Other high grade cameras and lenses. Write for particulars. A. C. Barber, State House, Salem, Ore.

FOR SALE $250.00, sacrifice for quick sale, leading studio, paying good living. Only 2 hours from San Francisco. Big territory, small competition. Uncle Sam wants me. Address, Box 23, "Camera Craft", San Francisco, Cal.

4x5 F.P.KODAK Zeiss Kodak lens, f-6.3 in Compound shutter, leather carrying case, plate back and three holders, Kodak metal tripod. All as good as new, cost $65.00 two years ago. Price $40.00. Chas. F. Rice, P. O. Box 517, Mamaroneck, N. Y.

FOR SALE A good paying, centrally located, completely equipped up-to-date, ground floor studio. Population 300,000. For particulars address E. E. Gustin, Portland, Ore.

WANTED No. 4 Perigraphic, or 14 in series "D" rectilinear, in exchange for New Ideal Film Tank System. A. P. Davis, Mfgr., Deposit, N. Y.

POSITION WANTED Young man wishes position with photographic studio or kodak finishing shop to learn profession. Low wages expected with chance for advancement. Address Amateur Photographer, care "Camera Craft", San Francisco, Cal.

FOR SALE 3A Kodak, R. R. lens, combination back for same with two plate-holders, 3¼x5½ plate tank. Will sell separate. Wm. Schroeder, 869 22d St., Milwaukee, Wis.

POSITION WANTED As manager of kodak or general photo supply house or department. Twenty years experience. Apply G. A. P., care "Camera Craft", San Francisco, Cal.

WANTED Good all-round man to take charge of studio, will give working interest with privilege of buying. For particulars address, D. N. F., care "Camera Craft", San Francisco, Cal.

FOR SALE No. 6 Cirkut outfit, like new, for $79.50. Speak quick if interested. W. Schiller & Co., 6 South Broadway, St. Louis, Mo.

FOR SALE Paying studio and best opportunity in Western University town. Good reason for selling. Bargain if taken at once. Address No. 20, care "Camera Craft", San Francisco, Cal.

FOR SALE Good studio. Business brought $2500.00 last year. Good place for German or Norwegian. Price $1500.00, which includes dwelling and lot. Very easy terms to right party. Address J. DeWilde, Cashier, First State Bank, Prairie Farm, Wis.

FOR SALE Studio building and lot in county seat town of 1400. Only studio in town. Running and soft water. One story frame building. This studio will be sold as real estate and a partial equipment will be thrown in. Nearest portrait competition ten miles. Price $1000.00; $700.00 cash, balance three years. Fine opportunity for a good workman. Reasons for selling satisfactory. The property is in Orange City, Sioux County, Iowa. Address L. O. Lohr, Sheldon, Iowa.

WANTED A-1 Retoucher. One who can work in backgrounds and assist generally. Must be fair operator. Good salary and permanent position for an American Protestant. Address C. F. Townsend, 613 Walnut St., Des Moines, Iowa.

STUDIO FOR RENT By May 1st. Renter to buy part of outfit. Address J. E. Pasonault, Williston, N. Dak.

FOR SALE Studio in North Central Iowa town of 1500. Best of equipment, electric lights, running water, no competition and large territory. Address Lock Box 894, Greene, Iowa.

FOR SALE Studio in a growing town of 1500 in best farming community in Red River Valley, Western Minnesota. Large territory with no competition. An ideal location and will not be for sale long, so act quick. Best of reasons for selling. Address Photographer, Browns Valley, Minn.

WANTED To rent studio in town of 1000 or upwards with privilege of buying later if business warrants. State all particulars in first letter. Address, X. L., care "Camera Craft", San Francisco, Cal.

WANTED Lady Retoucher. Must be good. One that can operate preferred. Permanent position to right party. State salary wanted. Address Claude Wright, Manchester, Iowa.

WANTED Position with first class studio as all-around workman. Experienced in all branches of the photographic work, especially retouching and dark-room work. Will go anywhere. Position must be permanent. For particulars address N. N., care "Camera Craft", San Francisco, Cal.

WANTED Position by skilled lady retoucher and finisher. Desire change of location. Strictly first class work and moderate salary. Address C. L., care "Camera Craft", San Francisco, Cal.

WANTED To buy 4A Dallmeyer. Must be in good condition and price reasonable. Address Northern Photo Supply Co., Minneapolis, Minn.

POSITION WANTED On Coast by receptionist and good retoucher; can operate and assist in any studio work. Address L. B., care "Camera Craft", San Francisco, Cal.

POSITION WANTED As photographer, home portraiture or out-of-doors, manager of amateur finishing department or salesman in photographic supply store; 12 years' experience; hot climate preferred. Address W. P., care "Camera Craft", San Francisco, Cal.

3A GRAFLEX Fitted with B. & L. Zeiss Tessar f:4.5, in excellent condition; privilege of examination. Make offer. Address W. A. S., care "Camera Craft", San Francisco, Cal.

FOR SALE Cheap or exchange Eastman 5x7 plate tank, Thornton and Pickard 2 and 4 inch shutters, 8x10 Seneca camera, R. R. lens, Auto shutter, new 5 foot 8 inch Cirkut printing frame, set one inch Nehring's supplementary lenses, new Wold Air brush, model N, 4 inch Silent studio shutter, large Parallax reflector and small electric fan. Good kodak wanted. H. Gunther, 20 Monroe St., San Francisco, Cal.

POSITION WANTED By Japanese man as printer, enlarger and all-round photographic work. Have long experience. B. H., 872 Sacramento St., San Francisco, Cal.

FOR SALE Fully equipped studio doing a good business, in the livest town in Washington; owner obliged to sacrifice. A genuine snap for the first party with $300.00, balance $150.00, terms. Angeles Studio, Port Angeles, Wash.

WANTED Negatives of Indians in costume, outdoor and portrait, suitable for art prints. Describe fully with size and price. No objection to small ones if good quality. Submit prints if possible. Jacobs, P-I Building, Seattle, Wash.

G. E. BIDDELL CAMERA DOCTOR 693 MISSION STREET, Cor. THIRD SAN FRANCISCO - CALIFORNIA

Eastman Kodak Company
ROCHESTER, N. Y., *The Kodak City.*

The Kodak Range Finder.

Few of us can see in terms of feet and inches. The eye, unaided, can only approximate distances. It may look as if the subject were fifteen feet from the Kodak when, as a matter of fact, the intervening distance may be twenty or ten feet. And the blurred "principal object" proves it.

The Kodak Range Finder marks a real photographic achievement. No longer is it necessary to guess at the focus—the Kodak Range Finder finds the focus for you—finds it quickly and with absolute accuracy. With the subject ten feet away, for example, and the conditions governing focus consequently exacting the Kodak Range Finder renders invaluable service. Mechanical precision supplants human fallibility. The amateur can devote much more time to the posing of his subject or to composition and lighting with the assurance that the resulting negative is bound to be sharp.

Detail Showing Kodak Range Finder.

Despite the fact that the Kodak Range Finder is a real innovation to photography—a radical departure from other methods of focusing—it is too simple both in construction and use to be dignified by the word "mechanism." Built into the standard beneath the camera shutter, the Kodak Range Finder consists of three mirrors and a prism. On two of these mirrors the image is seen direct—the third is glimpsed through the prism. The relative position of prism and mirrors is changed as the camera front is racked forward or back. When the horizontal lines of these three images mirrored, each of which is a part of the subject to be photographed, are continuous, absolutely correct focus has been secured, and by simply racking the camera front with the eye close to the finder, perfect alignment may be obtained, sure focus may be established, almost instantly.

In substituting scientific certainty for haphazard guess work in the matter of gauging distances, the Kodak Range Finder gives your lens just so much more chance to "make good."

The Kodak Range Finder is a distinctive feature of the 1A Autographic Kodak *Special* and the 3A Autographic Kodak *Special.* It is but natural that these two cameras should have been

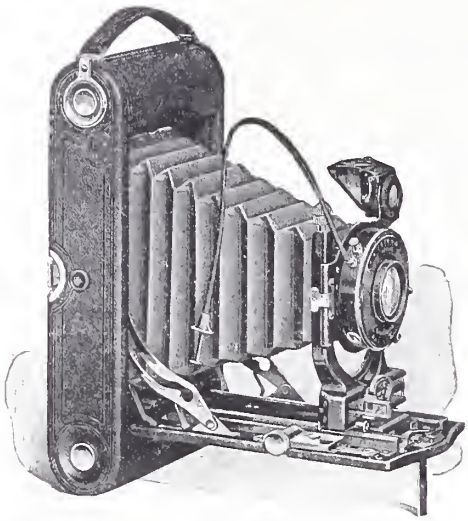
As image will appear when Kodak Range Finder is racked too far forward.

As image will appear when Kodak Range Finder is racked too far back.

As image will appear when Kodak is correctly focused.

Eastman Kodak Company

ROCHESTER, N. Y., *The Kodak City.*



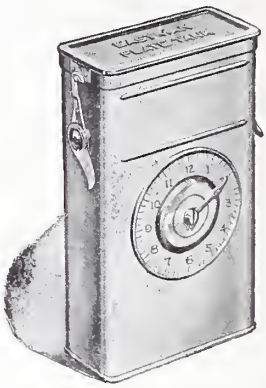
3A Autographic Kodak *Special* with Kodak Range Finder.

selected for such a mark of distinction. They are so up-to-the-minute in other respects with Optimo shutter with speeds ranging from 1/300 of a second to one second and sharp-cutting, high grade anastigmat lenses and autographic attachment, that even an innovation like the Kodak Range Finder feels perfectly at home.

In general appearance the 1A Autographic Kodak *Special* and the 3A Autographic Kodak *Special* are all that finest finish and high grade material can make them. Designed and equipped to be cameras de luxe of the Kodak line, they look the part.

The Price.

No. 1A Autographic Kodak *Special* with Kodak Anastigmat lens, *f*.6.3 and Optimo shutter - - - -	$45.00
With Bausch and Lomb Kodak Anastigmat, *f*.6.3. and Optimo shutter -	49.00
No. 3A Autographic Kodak *Special* with Kodak Anastigmat lens, *f*.6.3. and Optimo shutter - - - -	55.00
With Bausch and Lomb Kodak Anastigmat *f*.6.3. and Optimo shutter - -	66.00



What the Kodak Film Tank does for films, the

EASTMAN PLATE TANK

does for plates, producing fog-free negatives of highest obtainable quality with the maximum of convenience.

For the amateur using plates the Eastman Plate Tank is a real necessity.

THE PRICE.

Eastman Plate Tank, for 4 x 5, 3¼ x 5½, and smaller plates, includes solution cup, plate cage, loading fixture and adjustable kit, - - - -	$4.00
Ditto, 5 x 7, without kit, - - -	5.00
Separate Kits, for 5 x 7 tank, to take 3¼ x 5½, 4¼ x 6½ or 4¾ x 6½ plates, each, - - - - - -	.75

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.

Eastman Kodak Company

ROCHESTER, N. Y., *The Kodak City.*

A LARGE PRINT FROM A SMALL CAMERA

Remembering that the Vest Pocket Kodak is a hand camera the size of the hand and that the tailor has yet to invent a vest pocket that it will not fit comfortably, the size of the resulting picture, 1⅝ x 2½ inches, is really remarkable. This picture area is generous enough to tell the story but there are times when a larger print is necessary to completely satisfy. The V. P. K. makes such good pictures that occasionally we want to give them the distinction of larger space—and they deserve it. Whatever there may be of interest or beauty in the contact print is emphasized in the enlargement—the same story is told, only more forcibly. We like the small print but from its very size there is *more* to like about the enlargement.

The convenience of a small, companionable camera like the V. P. K. and the satisfaction of amply proportioned pictures may both be realized if the Vest Pocket Kodak Enlarging Camera is included in the photographic equipment. Through its means post-card size enlargements are obtained from the small vest pocket negative in the simplest possible manner. The negative is slipped in at the small end of the camera, the paper at the large end, the exposure is made either by daylight or artificial light, and then follow the regular steps of developing and fixing. The lens is supported between negative and paper at just the proper focal distance so that the camera is always in focus. If your negative is sharp, your enlargement is bound to be sharp.

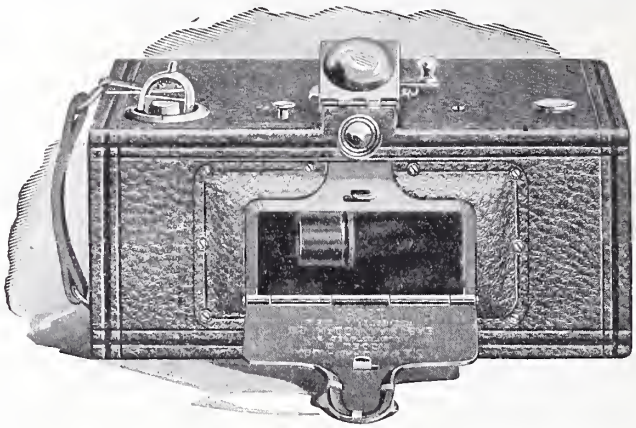
Kodak took the bother out of photography long ago—for the owner of a V. P. K , the Vest Pocket Kodak Enlarging Camera has done as much for enlarging.

The price of the Vest Pocket Kodak Enlarging Camera is $2.00.

"KODAK"

is our registered and common-law Trade Mark and cannot be rightfully applied except to goods of our manufacture. When a dealer tries to sell you under the Kodak name a camera or films or other goods not of our manufacture you can be sure that he has an inferior article that he is trying to market on the Kodak reputation.

If it isn't an Eastman,
it isn't a Kodak.



There's room for the rest of the view with the

Panoram Kodak

Stretches of landscape, out-door groups, clusters of buildings are easily embraced within the margins of the long, narrow panoram picture. The lens which automatically swings on a pivot takes in the whole view at a single exposure.

No amateur photographic equipment is complete without a Panoram Kodak — the ordinary type of camera, from its very construction, falls far short of panoram achievements.

THE PRICE.

No. 1 Panoram Kodak, scope of lens, 112 degrees, .	$10.00
No. 4 Panoram Kodak, scope of lens, 142 degrees, .	20.00

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.

Close-ups of nature with a Kodak and

Kodak Portrait Attachment

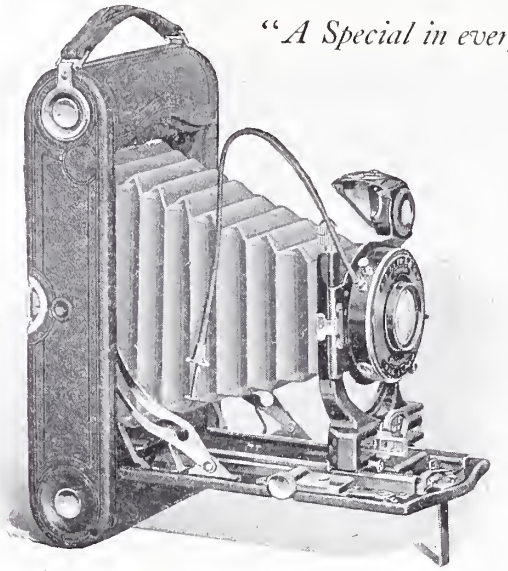
With this efficient little device—it's just an extra lens—you can work so near your subject that intimate studies of flowers, ferns, birds-nests and the like are easily possible. And the resulting image is large enough to emphasize whatever there may be of interest or beauty in the subject photographed.

The price is fifty cents.

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.

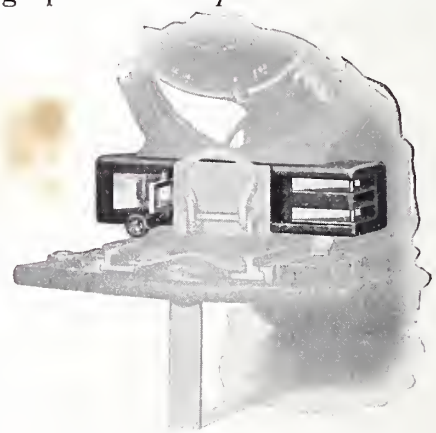
"A Special in every sense of the word."



The New 3A Autographic Kodak *Special* with Kodak Range Finder

THE KODAK RANGE FINDER. Something new to photography, a swift and sure means of determining the exact focus, is the Kodak Range Finder, a distinctive feature of the No. 3A Autographic Kodak *Special*. Three images, each a part of the subject to be photographed, appear in the Range Finder and by simply racking the camera front until the principal horizontal line of these three images is continuous, absolute focus is established.

THE LENS AND SHUTTER EQUIPMENT. The Optimo shutter with which the No. 3A Autographic Kodak *Special* is furnished has adjustable speeds from 1/300 of a second to 1 second assuring full photographic value from either of the two high-grade, sharp-cutting anastigmat lenses with which the camera is listed.



DETAIL SHOWING RANGE FINDER.

THE PRICE

3A AUTOGRAPHIC KODAK *SPECIAL*

With Kodak Anastigmat lens, *f.* 6.3 and Optimo shutter, ...	$55.00
With Bausch & Lomb Kodak Anastigmat lens, *f.* 6.3 and Optimo shutter, ...	66.00

EASTMAN KODAK COMPANY,

ROCHESTER, N. Y., *The Kodak City.*

This seal is on every carton of

NEPERA SOLUTION

It means that the developing solution inside is good enough to completely satisfy critical experts.

Nepera, containing Elon and Hydrochinon, is particularly adapted for developing Velox prints—it is also economical, the Velox formula requiring only one part Nepera to four parts water.

THE PRICE.

Per 4 ounce bottle, ...	$0.28
Per 16 ounce bottle, ...	.84

EASTMAN KODAK COMPANY,
ROCHESTER, N. Y.

At your dealer's.

The Revolving Back Junior

The Revolving Back Junior makes 2¼ x 3¼ pictures on roll film, plates or film packs. It is fitted with the Graflex Focal Plane Shutter operating at any speed from "time" to 1-1000 of a second. When you look in the focusing hood, you see the image right side up, the size it will appear in the finished picture, and this image remains brilliantly visible up to the instant of exposure.

The back of the camera revolves, enabling the user to make either vertical or horizontal negatives without turning the camera on its side

SEND FOR CATALOG

Folmer & Schwing Division
Eastman Kodak Co.,
ROCHESTER, N. Y.

The simplest of cameras

PREMO FILM PACK CAMERAS

Every process from loading to unloading can be performed more quickly and easily than with cameras of any other type.

To load, open back of camera, drop in twelve-exposure Premo Film Pack, and close back.

To change films for successive exposures, merely pull out from the top successive film pack tabs. A film may be so changed in less than a second.

To remove exposed pack, just open back of camera and take it out. After the last exposure, the pack is automatically rendered light-tight.

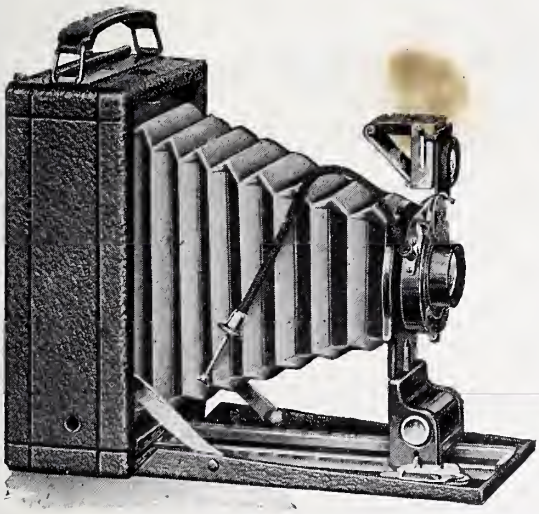
At any time one or more films may be removed for development without injury to the remaining unexposed films—a unique feature in film photography.

This simple operation not only eliminates all complications, but makes it possible to supply exceptionally light and compact cameras for the most popular sizes of amateur pictures.

As for quality, these cameras are fitted with Kodak Ball Bearing shutters and tested lenses, they are all rigidly inspected, and the film is from the same stock as the Eastman N. C.

Get the new Premo catalogue from your dealer, or write us for it. Every one interested in photography should have a copy of this interesting book.

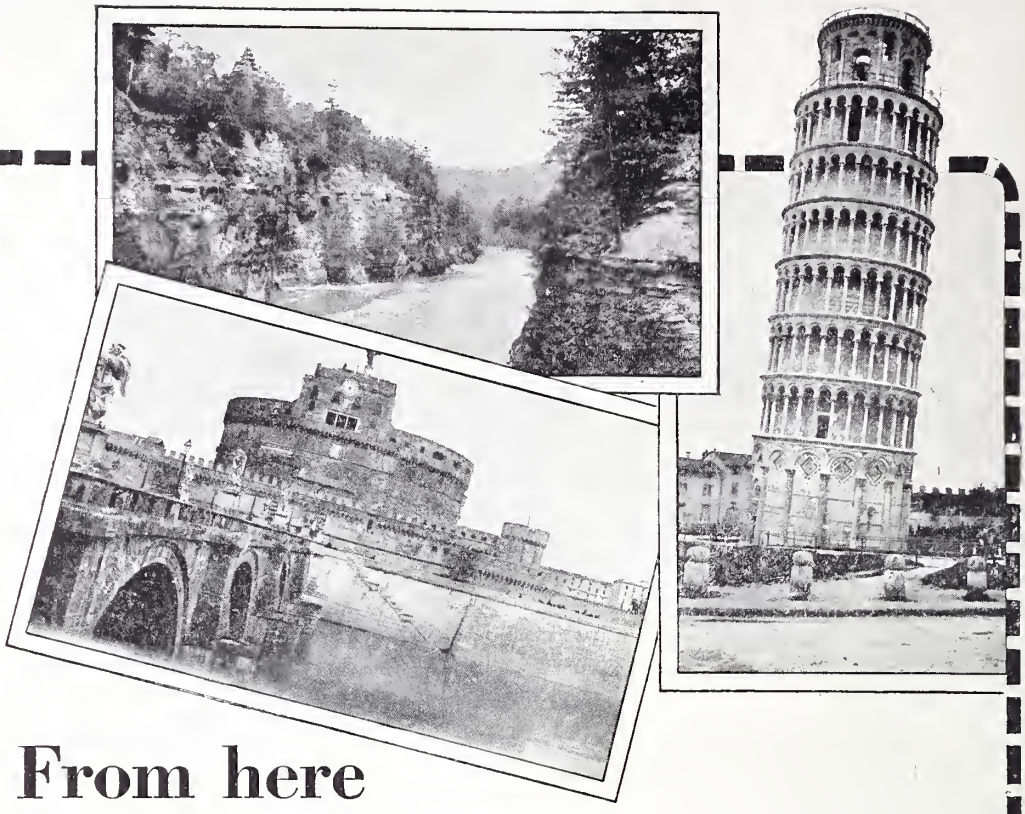
ROCHESTER OPTICAL DIVISION, EASTMAN KODAK CO., ROCHESTER, N.Y.



An illustration of the PREMOETTE SR.

The Shutter is the Kodak Ball Bearing with Kodak Anastigmat lens *f*.7.7. With this equipment prices are:

2½ x 4¼,	. $15.00
3¼ x 4¼,	. $15.00
3¼ x 5½,	. $17.50



From here and there—

come photos such as these—clear proof of the clean results which the tourist obtains with the

Bausch and Lomb TESSAR IIb

The remarkable speed of the Tessar Lens is a great asset to the traveller who must snap his photos on the instant—no matter what the light may be.

Its adaptability to light and weather conditions makes possible the taking of sharp, clear photos on dull days or late in the day, when ordinary lenses are useless. Sixty-one per cent. more light gets through the Tessar at full opening than the ordinary camera lenses.

Let us send you a copy of "What Lens Shall I Buy?" A booklet to help you select the proper lens for your needs.

Bausch & Lomb Optical Co.

624 ST. PAUL STREET ROCHESTER, N.Y.

NEW YORK WASHINGTON CHICAGO SAN FRANCISCO

Leading American Makers of Photographic and Ophthalmic Lenses, Projection Lanterns (Balopticons), Microscopes, Binoculars and other High-Grade Optical Products.

REXO CAMERAS

Have You Tried The New

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JUNIOR CAMERAS

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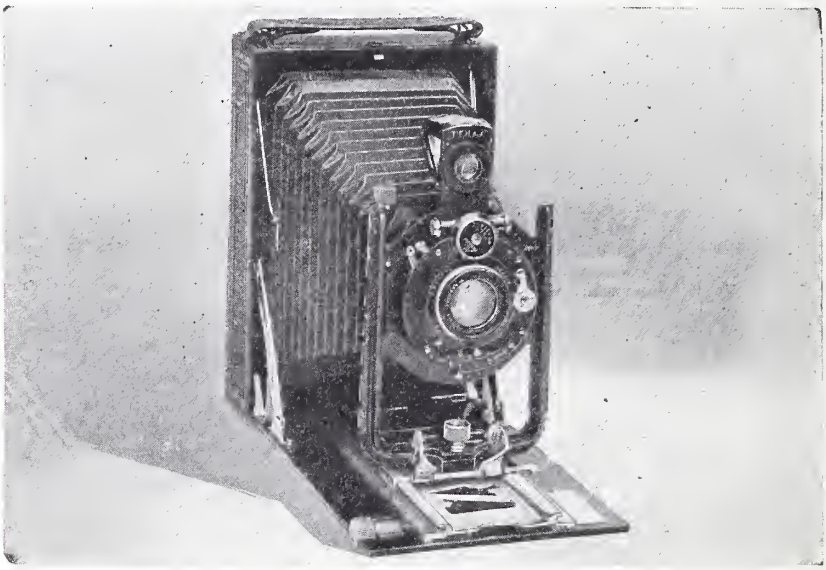

WHEN all is said and done, the careful amateur or professional photographer *prefers* to use a ground glass with which he may focus accurately and compose his picture artistically. Until recent years cameras equipped with a ground-glass were large and cumbersome, but in the 10x15 cm or 3¼x5½ **GOERZ MANUFOC** and **TARO TENAX** cameras, ground-glass focusing, long bellows extension and other conveniences have been successfully combined with absolute compactness and efficiency. The 10x15 cm (about 4x6 in.) plates and film packs are now obtainable from nearly all dealers. If this size cannot be obtained, 3¼x5½ plates and film packs may be used conveniently by simply inserting a 3¼x5½ kit in the 10x15 cm plate holders and film pack adapter. **GOERZ MANUFOC** and **TARO TENAX** cameras are equipped with the famous **GOERZ DAGOR F:6.8, GOERZ SYNTOR F:6.8** and **GOERZ TENASTIGMAT F:6.8** lenses. These complete equipments are so well-made, compact and efficient that they must be examined to be fully appreciated. Your dealer will gladly show you a **GOERZ MANUFOC** or **TARO TENAX** camera, and be sure to ask for the new **GOERZ CATALOG.**

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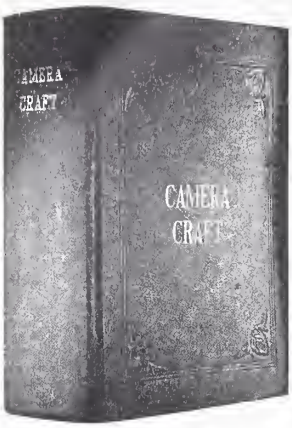

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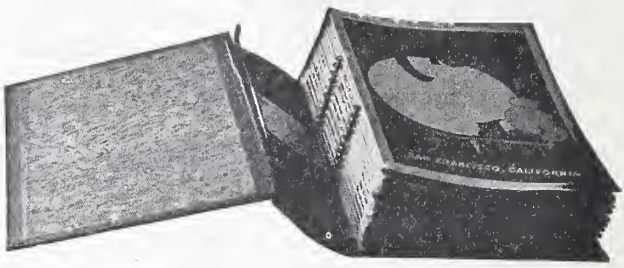

market only a few months ago it has already been adopted by such leading publications as Cosmopolitan, Ladies' Home Journal, Good Housekeeping and hundreds of others. This binder is finished in book cloth with **Camera Craft** stamped in gold on front cover and back. It is equipped with a patented device for binding twelve copies of Camera Craft together in a single volume, having the appearance of a regular bound book. It is strong in construction and so simple in operation that the filing or extraction of one or more magazines requires but a few seconds. No punching of holes is necessary—just a slit between the pages with a pen knife, the insertion of a metal clip, and the magazine is ready to be dropped into place over the binding rods, which are swung back and, with a slight turn of the wrist, securely locked to the solid wood back. The back is not flexible and there is no chance for the magazine to work loose or uneven. We supply them at **$1.00 each, postpaid.**

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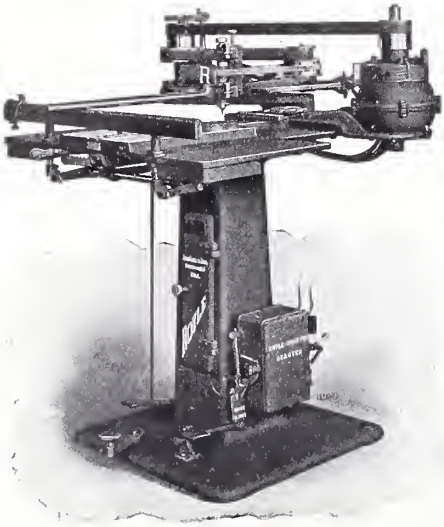

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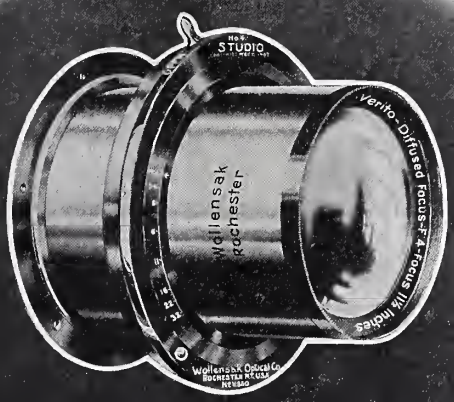

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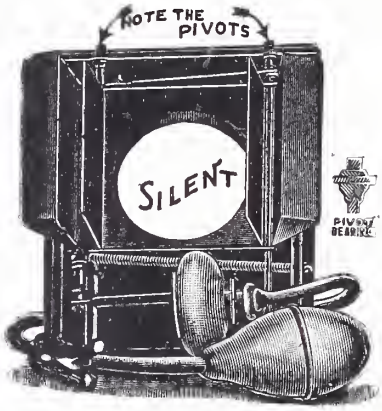

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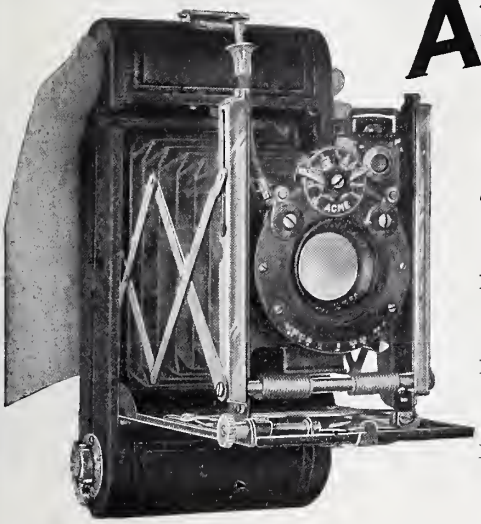

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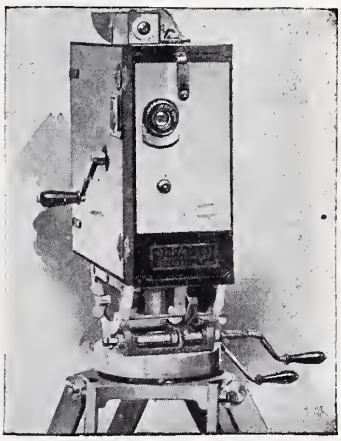

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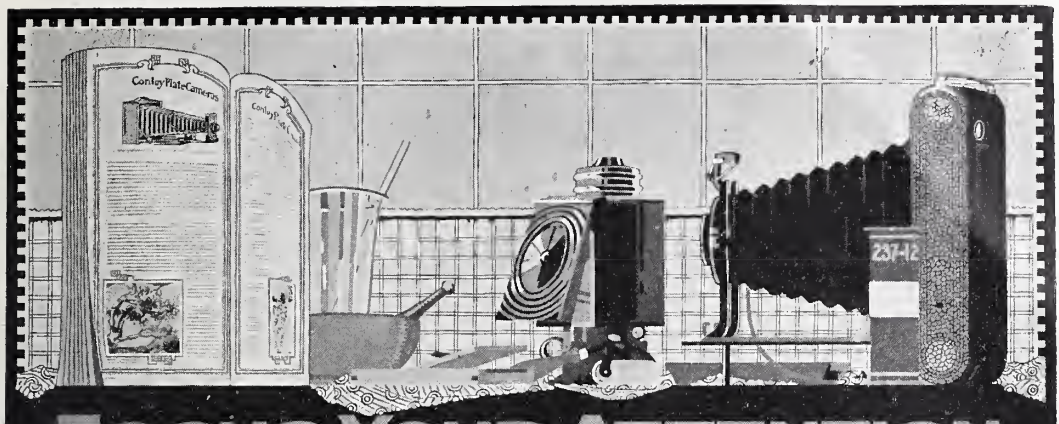

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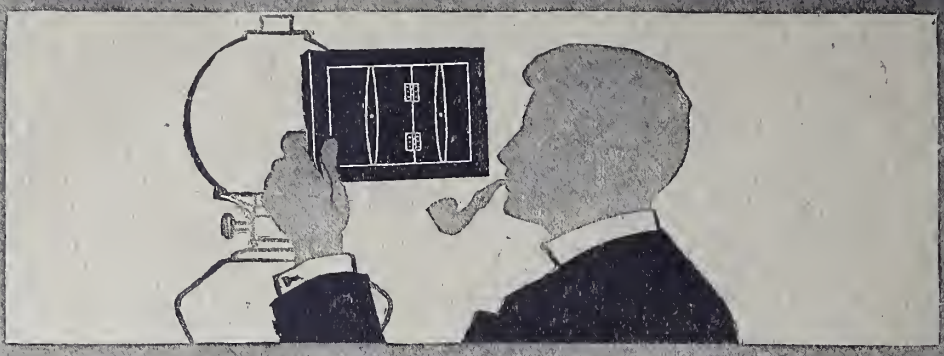

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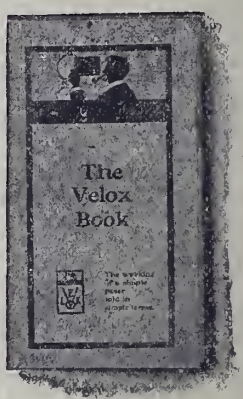

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